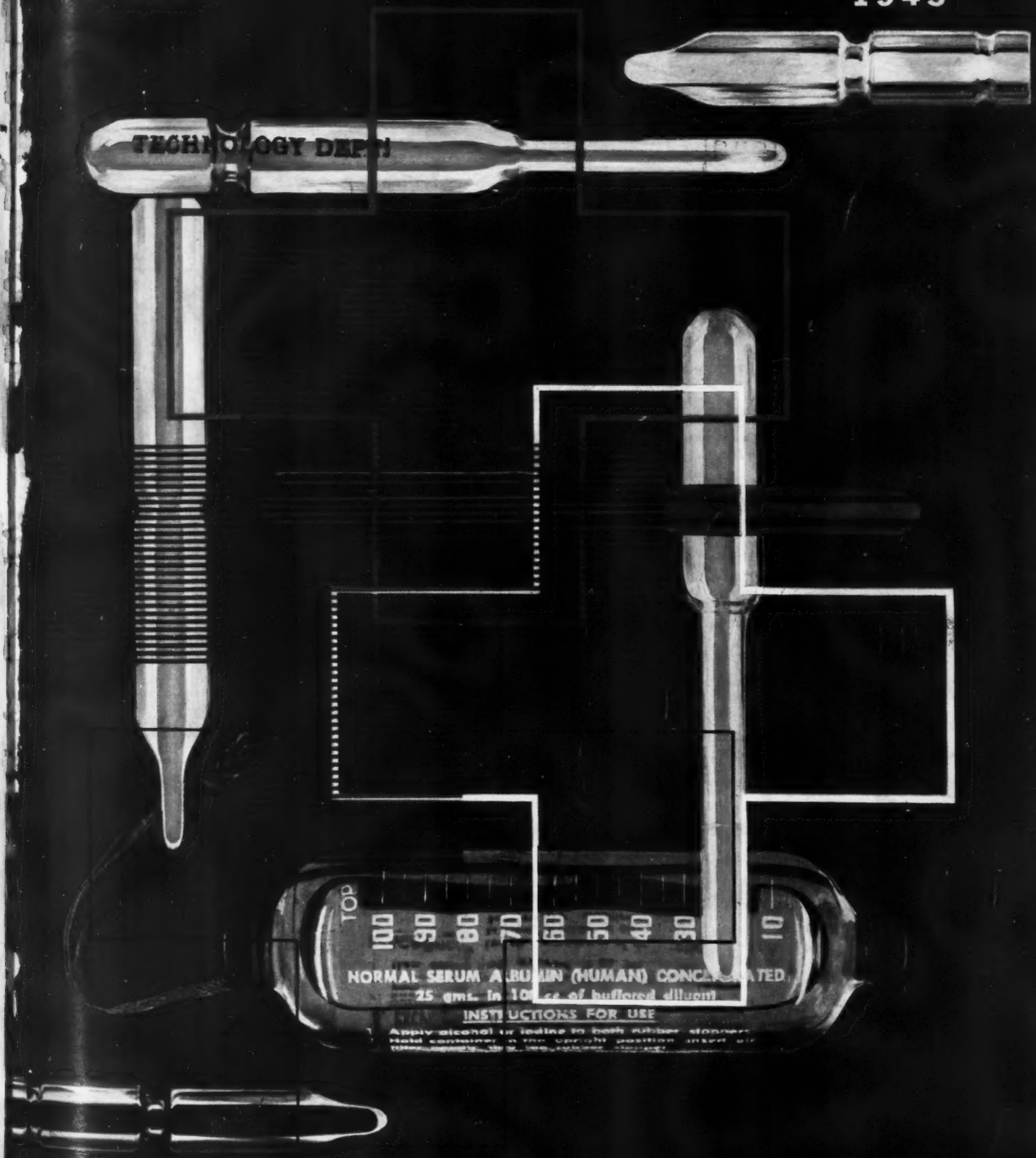
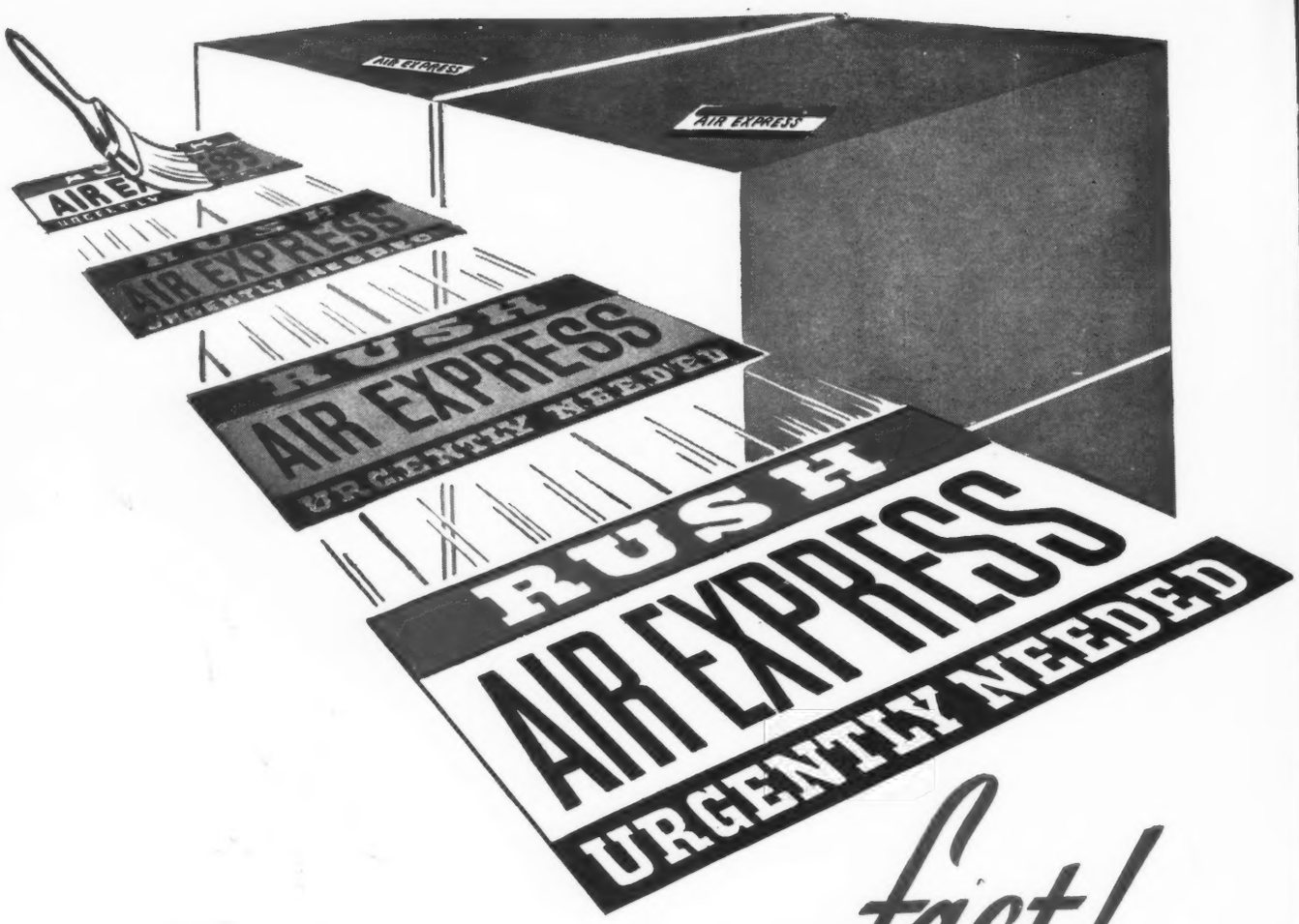
MODERN PACKAGING

October 1945





WHEN AN ADHESIVE MUST DRY *fast!*

Rely on National ...with its long practiced, specialized skill ... to provide an adhesive to meet your specific drying speed requirements.

Let's have a look at the drying speed requirements of a wide range of packaging, converting and assembling operations: Carton labeling and over-coating should permit prompt stacking without danger of *locking* . . . to speed shipments . . . protect printed instructions . . . make package appearance a sales asset.

Envelope gum drying speed should keep pace with high speed production and permit immediate nesting for shipment . . . sheet lamination should permit immediate stacking without danger of mildewing . . . package precoating with reactivating and thermo-plastic adhesives should permit immediate folding operations . . . in bookbinding, gluing-off should permit rounding and backing within 20 minutes – instead of the traditional 3 to 4 hours. And all drying speeds should be maintained uniformly in fair weather and foul.

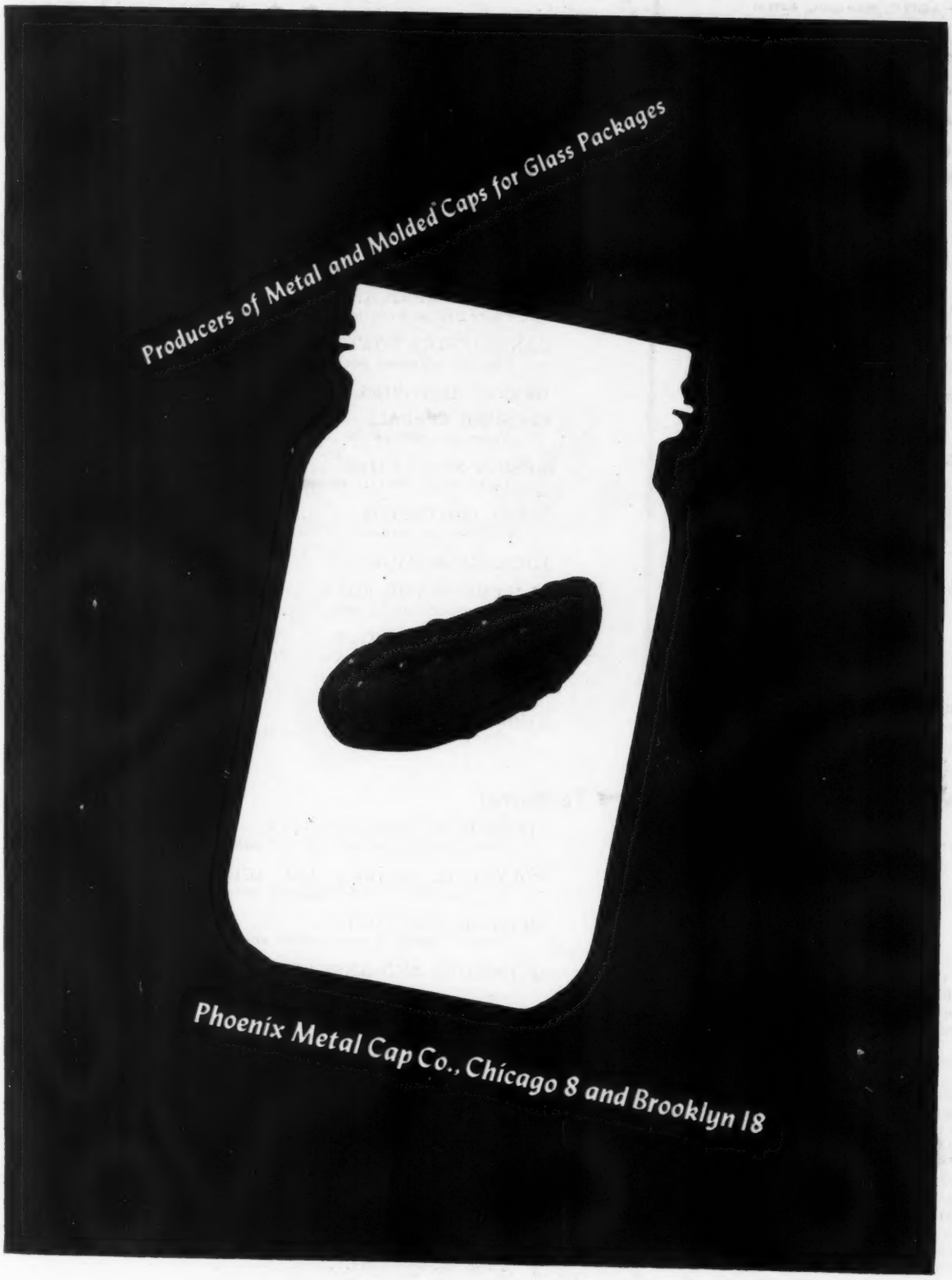
Drying speed, however, is only one of many, very many, properties an adhesive must have to do a specific job. In addition to the factors of surface, application methods and field conditions there must be the final factor of operating safety as insurance against commercial variables.

You can rely on National . . . a specialist in all types of industrial adhesives . . . to give careful attention to every factor of your adhesion problem. Inquire NOW!

Offices: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto and Montreal. In England: National Adhesives Ltd., Slough Bucks.

National ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY TYPE OF ADHESION


Producers of Metal and Molded Caps for Glass Packages
Phoenix Metal Cap Co., Chicago 8 and Brooklyn 18

MODERN PACKAGING

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★ ★ ★

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COVER—The role that medical packaging plays in saving human life is strikingly symbolized by this abstract design arrangement of glass vials and ampoules for this month's cover by Peter Piening.

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Printed in U. S. A. Acceptance under the Act of June 5, 1934, at Easton, Pa. Authorized October 7, 1936.

FIVE Packaging Operations on *ONE* REDINGTON

PUBLIC LIBRARY
OCT 2 5 1945
DETROIT

1. Cartoning
2. Imprinting
3. Cellophane wrapping
4. Applying easy opening tape
5. Adjustability

An outstanding example of modern packaging that *creates* sales . . . Cellophane wraps for *protection* . . . has a "window" for *consumer appeal* . . . an easy opening tape for *convenience.*

Five different operations are performed on this *one* Redington machine, in packaging the famous Dr. West "25" toothbrushes.

Brushes are placed by the operator in conveyor pockets . . . cartons are machine fed and expanded . . . brushes inserted . . . then the cartons are closed and transferred directly to a mechanism which *Cellophane wraps* them and applies the easy opening tape. *Outstanding feature* is the means for imprinting the type of brush on one end of the carton . . . easing the problem of stock control and the need of a large inventory of variously printed cartons.

This *versatile* Redington is *adjustable* . . . producing other types and sizes. One package includes a die scored blank that is formed by the machine into a tray to hold a brush inside the carton.

Redingtons have helped make modern packaging *practical* at Dr. West since 1927 . . . including Dr. West Tooth Paste. *No wonder* production men, for *48 years*, have said, "If it's packaging, try Redington first."

F. B. REDINGTON CO. (Est. 1897) 110-112 So. Sangamon St., Chicago 7, Ill.

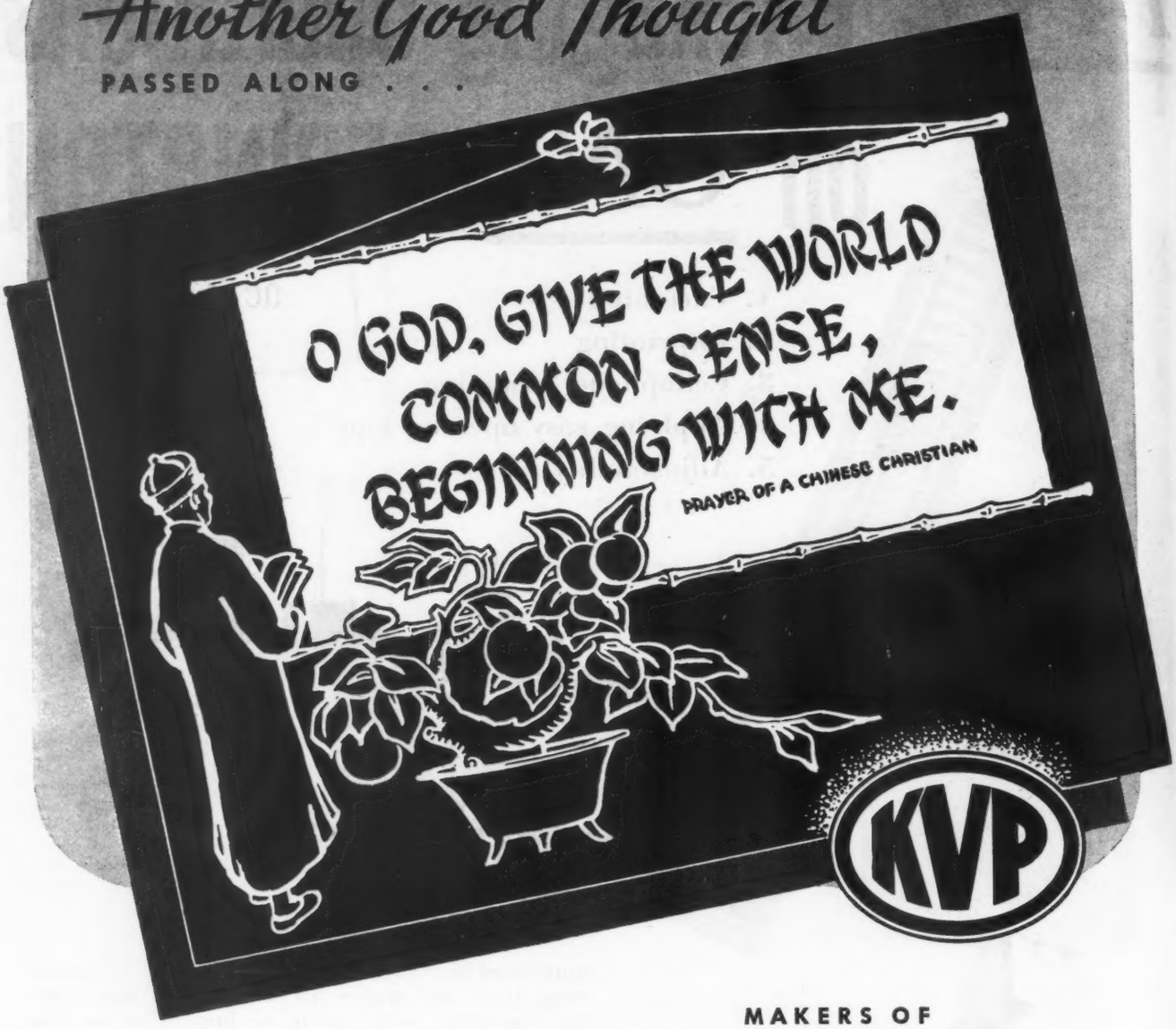
REDINGTON

PACKAGING MACHINES

FOR CARTONING • WRAPPING • SPECIAL PACKAGING

Another Good Thought

PASSED ALONG . . .



MAKERS OF

FOOD PROTECTION PAPERS

★

GENUINE VEGETABLE PARCHMENT
SPECIAL TREATED . .
GREASEPROOF . .
WAXED . .

"THE WORLD'S MODEL PAPER MILL"

KALAMAZOO VEGETABLE PARCHMENT COMPANY

. . .

PARCHMENT . KALAMAZOO 99 . MICH.

BRANCH PLANTS IN HOUSTON, TEXAS AND PHILADELPHIA, PENNSYLVANIA

Water-borne polyvinyl resins provide safer, simpler coating methods

GEON latex is a film-forming plastic material used to apply thin coatings to fabric, paper, fibre, thread, wire or any other material to which coatings can be applied by conventional methods. It is a true latex—a water dispersion containing a solid content of approximately 50% vinyl resin. Especially suitable for use in continuous processes, GEON latex is an easy-flowing, milk-like liquid of remarkably high stability. It is *not* rubber and contains *no* rubber.

When suitably formulated GEON latex can be used with standard coating equipment. Variations in viscosity can be obtained to make GEON latex suitable for use with such machines as knife spreaders, air knife coaters, roller applicators and continuous dip tanks.

In addition to the natural economy and simplicity of processing, GEON latex, being a water system, offers safety advantages not to be found in solvent systems. The dangers of toxicity and explosion are eliminated. Dangerous, expensive and cumbersome solvent recovery systems are unnecessary because no solvent is used.

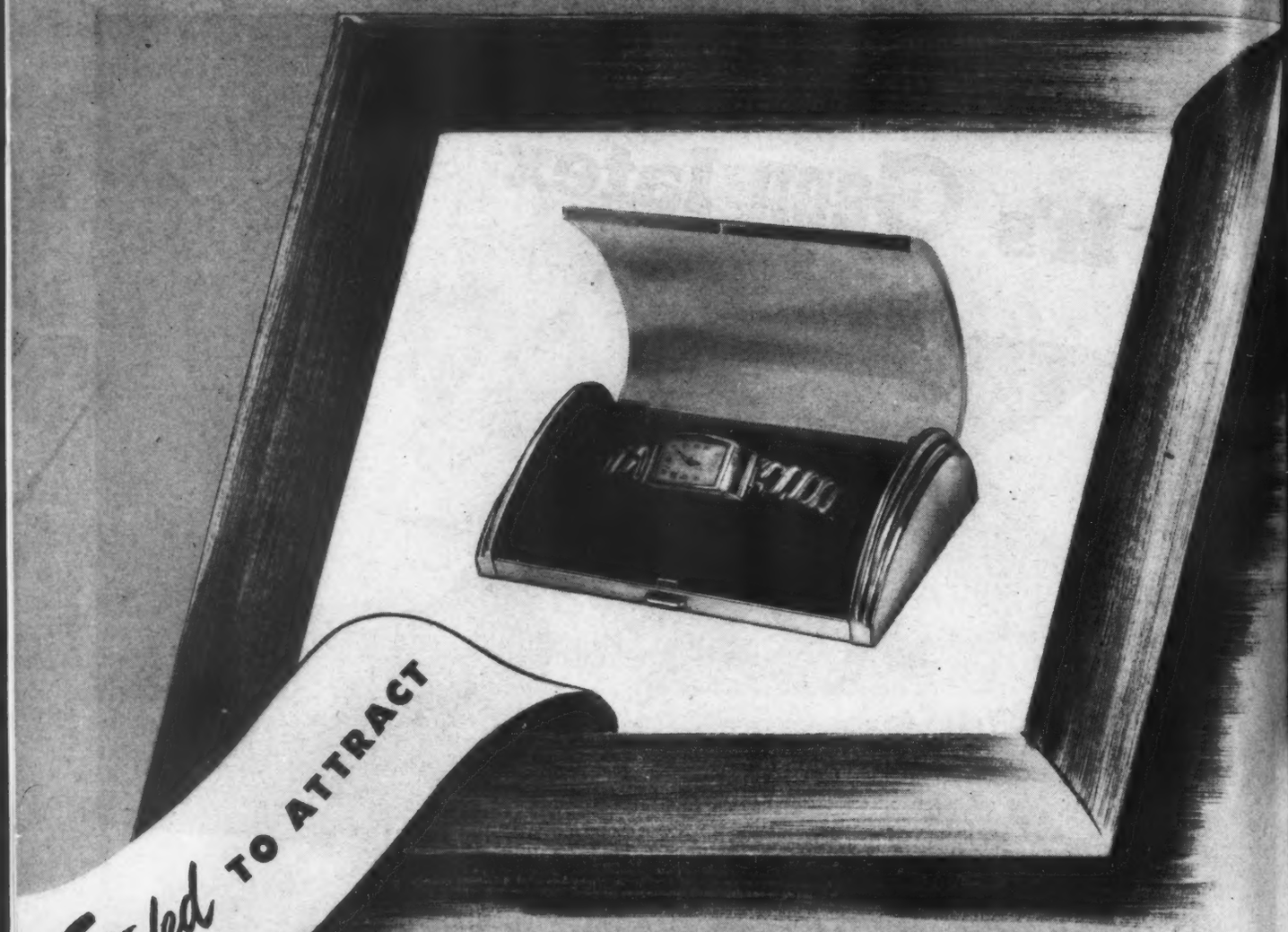
GEON latex, like all latices, has its limitations. It is not a "miracle material", that will do away with other coating methods. Yet already its use in military and related applications has proved that entire new fields in coatings will be opened up by this new material, the development of which was a true scientific achievement. For more information, write Department LL-10, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

Victory bonds are still your best buy!



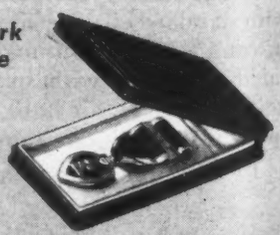
Styled TO ATTRACT

Send your products to market in boxes that can do an all-day selling job—every day.

Arrow packaging experts are at your service now, to help you plan boxes of maximum sales appeal.

Arrow box concepts are not confined solely to metal, glass, plastics, wood or cardboard. Our varied facilities enable us to manufacture in *any* or *all* of these materials, with coverings of velvet, leatherette, fabrics and paper. We are honored to serve many leaders in the jewelry, cosmetics and other fields. They look to Arrow for boxes styled to attract—planned to create the impulse to buy—constructed for lasting beauty and utility.

Arrow is approaching the 2,000,000 mark in the production of boxes which hold the Purple Heart and other medals for the heroes of our Armed Forces. And Arrow is proud that, throughout the war years it, has consistently served this need of the Army and Navy.

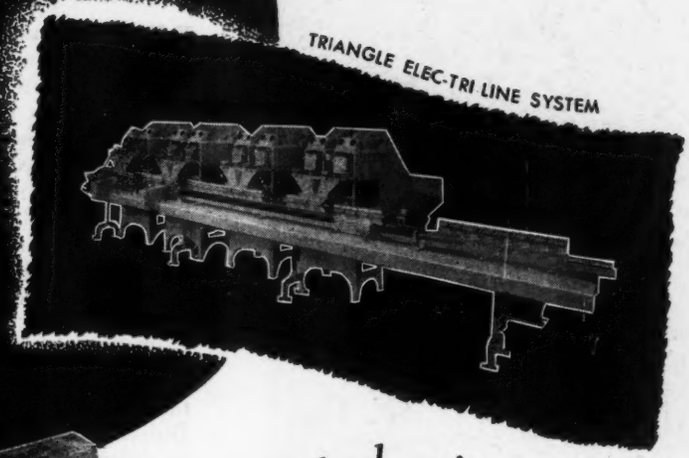


Arrow BOXES AND DISPLAYS

ARROW MANUFACTURING COMPANY, INC., FIFTEENTH AND HUDSON STREETS, HOBOKEN, NEW JERS

think...

...how much it costs you to weigh and package your products...



here is a faster and less costly method . . .

A FOOD MANUFACTURER operated four of these Triangle Elec-Tri-Line Systems 20 hours a day. Each line automatically weighed and filled 70 to 80 packages *per minute! In only four months time he saved enough in packaging costs to pay completely for the installation.* Think that over. This Elec-Tri-Line system is practically human. It handles a wide variety of products, gently, without breakage. Weights are accurate to a tiny fraction of an ounce, less labor is required, production is stepped up, the machine is practically self-cleaning, is easily adjusted for different products, different packages. And . . . while you're still thinking about it . . . write for complete details.

TRIANGLE PACKAGE MACHINERY CO.
907 N. SPAULDING AVE., CHICAGO 51, ILL.

Sales Offices in: New York; Los Angeles; Dallas; San Francisco; Denver; Cleveland; Birmingham; Memphis; North Quincy, Mass.; Montreal, Can.

MAGNESIA

IT BOOMERANGS ON THE GLASS-MAKER . . . IF HE USES TOO MUCH!

WHEN used in exact amounts, magnesia helps make the glass batch melt faster and improves the working qualities of the glass. If too much is used, the effect is reversed, making the batch not easier, but harder, to melt!

If these were magnesia's only contributions, glassmakers might not bother with it. Magnesia also reduces the effect of heat on the finished glass, by lowering the coefficient of expansion; and even more important, magnesia helps prevent devitrification—(the formation of very fine crystals as the glass cools). So magnesia is actually a valuable glassmaking ingredient.

The magnesia used in glass batches is added in the form of dolomite or dolomitic burnt lime. Dolomite is a natural combination of calcium and magnesium carbonate. This means that when calculating his batch quantities the glassmaker has two oxides to consider in this new material instead of just one.

However, through long years of experience and research, Armstrong's glassmakers have learned to make the most, not only of magnesia, but of all the other ingredients they use in making glass. Their success is, of course, one of the big reasons why Armstrong's Glass continues to enjoy a reputation for top quality.

Send today for our free, illustrated booklet, "Men and Glass." It contains many interesting sidelights on the making of fine glass. Address Armstrong Cork Company, Glass and Closure Division, 5910 Prince Street, Lancaster, Pennsylvania.

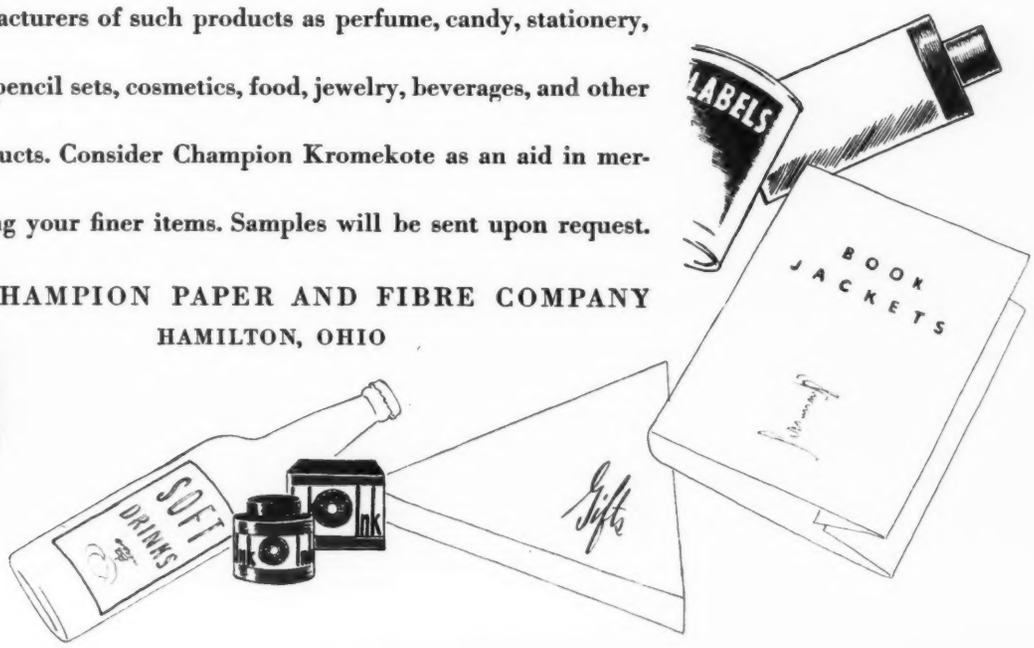
ARMSTRONG'S GLASS *and* **ARMSTRONG'S CLOSURES**

Exquisite

practical, beautiful and sales productive

Champion Kromekote is the ultimate in rich, attractive raiment for quality packages. Its brilliant high finish catches the eye, enhances the contents, and boosts sales. This patented beauty wrap is exclusive with Champion, and is the choice of hundreds of manufacturers of such products as perfume, candy, stationery, pen and pencil sets, cosmetics, food, jewelry, beverages, and other fine products. Consider Champion Kromekote as an aid in merchandising your finer items. Samples will be sent upon request.

THE CHAMPION PAPER AND FIBRE COMPANY
HAMILTON, OHIO



PRIMER OF PERFECT PROTECTION

M is for Meat

— kept juicy and tender for months, quick-frozen in **PLIOFILM** — because it seals moisture *in!*

and Motors, too

— protected against rust and corrosion by packaging, with a desiccant, in **PLIOFILM** — because it seals moisture *out!*

ALL TYPES of quick-frozen foods — meats, fowl, fish, fruit and vegetables — will keep far better, and be far tastier, protected in **PLIOFILM** sheets or bags. ★ That's because this handy transparent packaging material is truly moistureproof. It seals juices in foods, prevents dehydration in the freezer — just as it keeps machinery rust-free in the tropics. ★ It does this so well that, after Pearl Harbor, Goodyear's entire production of **PLIOFILM** went into only the most critical military packaging applications. ★ There's none available yet for everyday commercial use, to keep moisture *in* or *out*, as you desire. ★ But it will be back and alert manufacturers are already designing their **PLIOFILM** packages now to win sales leadership with quality-protected products — both fresh and frozen. Goodyear, Chemical Products Division, Pliofilm Sales Dept., Akron 16, Ohio.

Pliofilm—T.M. The Goodyear Tire & Rubber Company

Pliofilm

A PRODUCT OF GOODYEAR RESEARCH

GOODYEAR

THE GREATEST NAME IN RUBBER

BUY VICTORY BONDS

THE PACKAGE OF THE **FUTURE**

THE PALLETIZED LOAD
A WAR-BORN DEVELOPMENT

In Postwar planning many large shippers will be turning to the Palletized Load, because of the experience gained in this war.

Designing shipping containers to fit a freight car and NOT to hold a given amount of goods was a critical problem which was solved militarily.

There is NO reason why industries cannot adopt this procedure when the contents "Fit the Container" — which Fits the Pallet — which Fits the Boxcar.

Prior to the Palletized method, it took 14 men a half a day to break material out of stowage and load a car, handling each container separately. Now one person on a fork truck can load the same car in less than 2 hours.

For large users — booklet on the Palletized Load, illustrated with official photographs.

SAVE GAIR WASTE PAPER

ROBERT GAIR COMPANY, INC., NEW YORK • GAIR COMPANY CANADA LIMITED, TORONTO

Folding Cartons • Box Boards • Fibre and Corrugated Shipping Containers

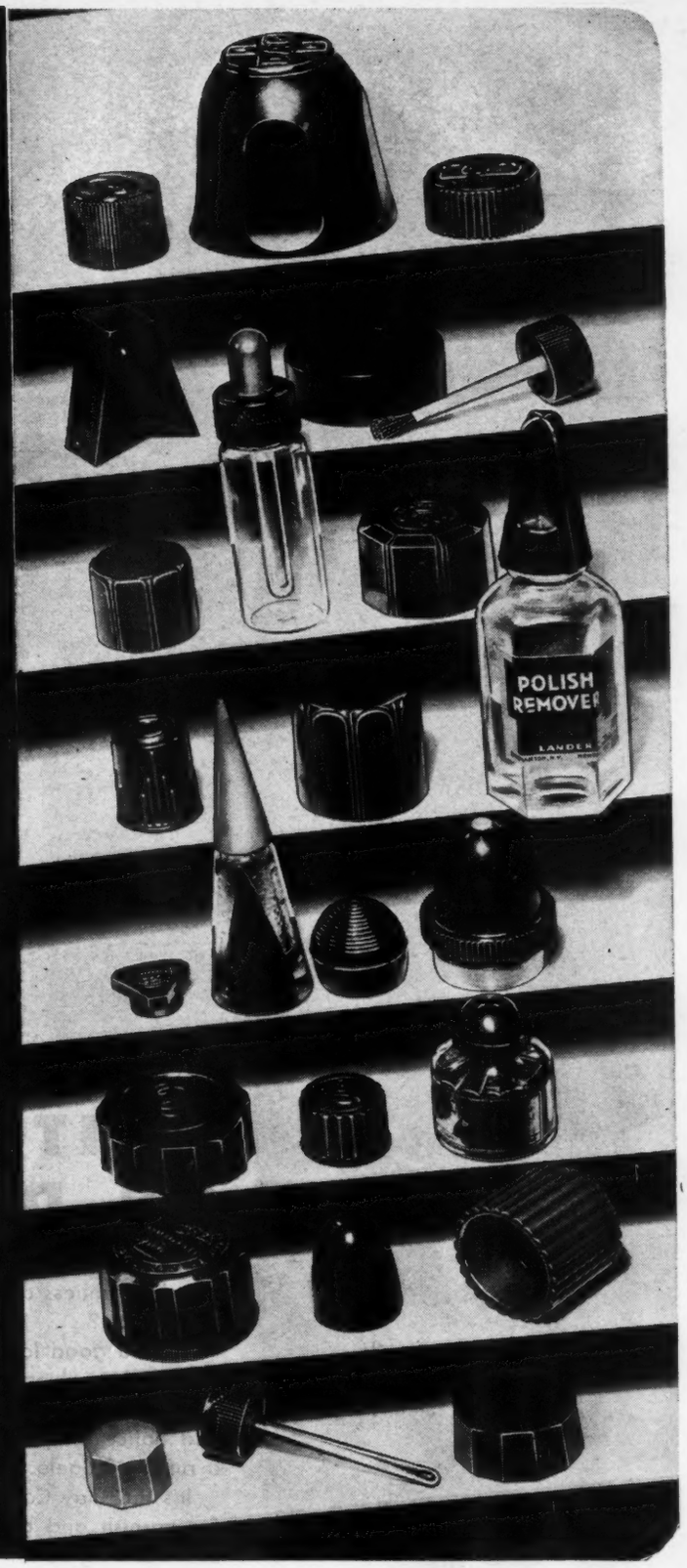
HERE'S WHY

"More Closures Have Been Made From Durez Than From Any Other Plastic Material"

For years closure manufacturers have been relying on Durez phenolic plastics because the natural versatility of these materials permits their unrestricted use in manufacturing closures of all sizes and shapes—for all purposes.

Such properties as non-bleeding, eye-appealing finish, excellent moldability, and resistance to moisture, chemicals, alkalies and temperature extremes—render Durez molding compounds invaluable to imaginative designers who require the utmost versatility in a material in order to translate their ideas into profit-making merchandise.

As specialists for the past quarter century in the production of phenolic plastics, Durez technicians possess the broad experience necessary for giving competent guidance to the closure manufacturer in search of the plastic material which precisely fits his job. The benefits which this rich background and a voluminous collection of proven data can offer, are available to you at all times. Durez Plastics & Chemicals, Inc., 4810 Walck Road, North Tonawanda, New York.



Wartime restrictions are still limiting the availability of our materials . . . both in volume and color. However, now is the time to plan for the future.

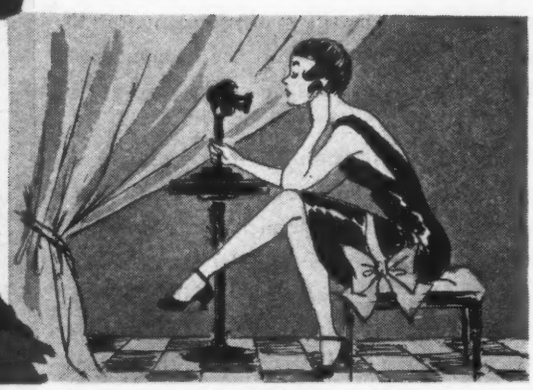
DUREZ

PHENOLIC RESINS

- MOLDING COMPOUNDS
- INDUSTRIAL RESINS
- OIL SOLUBLE RESINS

PLASTICS THAT FIT THE JOB

Your Carton



IS IT FASHION — PLUS OR DATED — MINUS?

Three years or more since most packages have had a critical analysis! A little freshness and newness might help. Why wait for competition to make you decide?

Take a good look now at convenience features, size and quality impressions, color values, protection against soiling, smooth finish for buyer-appeal. If a change is in order, run your proofs on Ridgelo Clay Coated Boxboard and notice the difference. If you want to see a better carton "as is," try a run on Ridgelo.

It's the Clay Coating on board that means clean smoothness, extra sheen for varnish and gloss inks, true reproduction of solids and color designs. Every folding carton is tailor-made. Use a fine "fabric" and cash in on good workmanship. Pick Ridgelo and you start with a truly fine folding boxboard.

Ridgelo
CLAY COATED
BOXBOARDS

MADE AT RIDGEFIELD, N. J.,
BY LOWE PAPER COMPANY

Keep saving waste paper

Representatives: Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Sons, Inc., Philadelphia

VISUAL TRAINING AIDS for the Armed Forces, devised and produced by Einson-Freeman:

1—Training Sextant . . . **2**—Compass Trainer . . . **3**—Pocket Blinker . . . **4**—Semaphore Trainer . . . **5**—Aerology Charts . . . **6**—Azimuth Finder . . . **7**—Rifle Sighter . . . **8**—Graphic Portfolios . . . **9**—Flag Hoist Trainer.

War Production . . .

The lithographic industry made an essential contribution to the war effort with needed charts, maps, manuals and technical literature.

Einson-Freeman found opportunity for additional service in contributions to the solution of urgent training problems . . . with training aids reflecting long experience and proficiency in graphic persuasion and presentation.

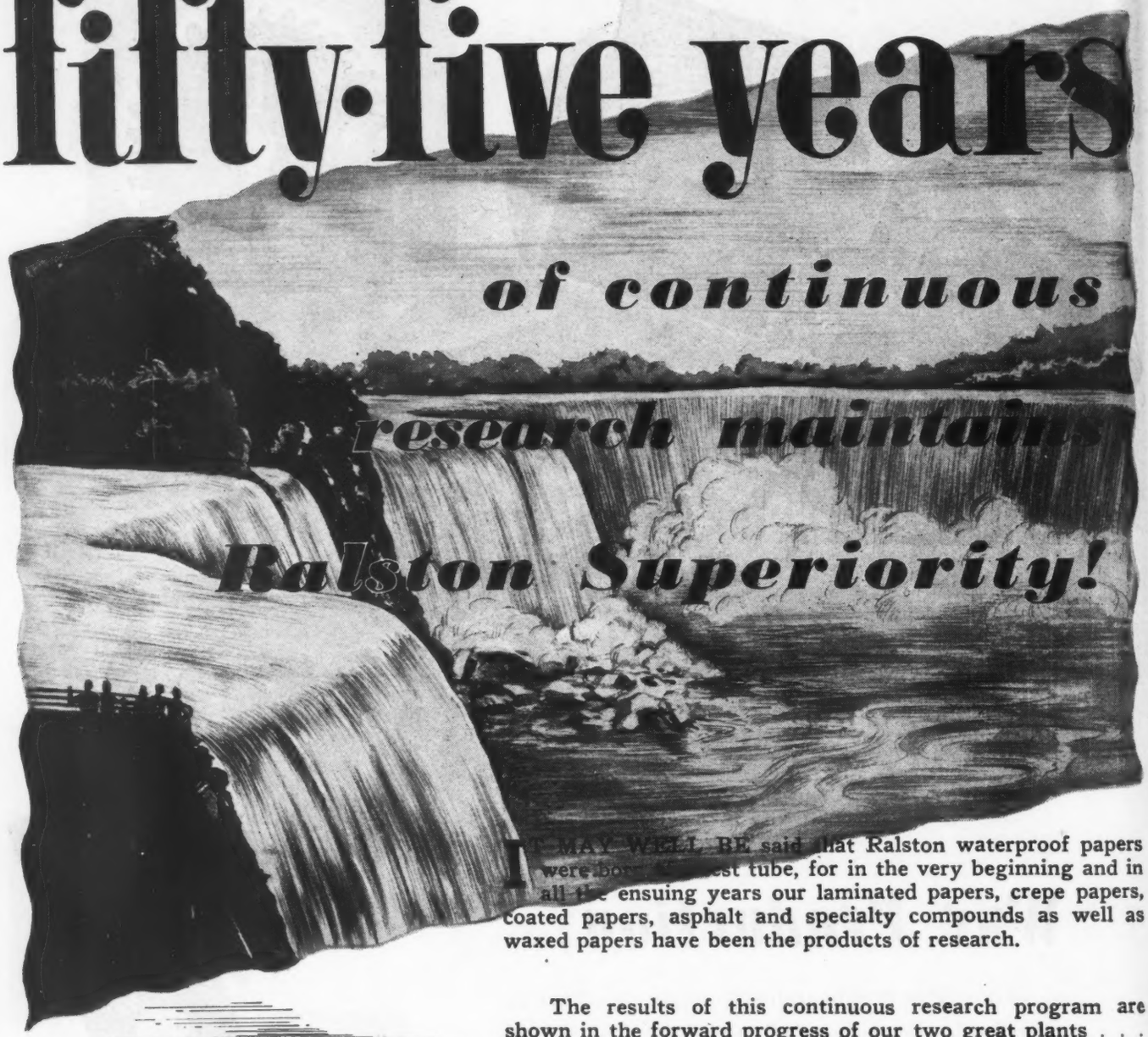
These exhibits also indicate an attitude and approach to problems that may suggest Einson-Freeman's utility in coming sales programs. Inquiries are invited.

Einson-Freeman Co., INC. • *Live & Learn Lithographers*

STARR & BORDEN AVENUES, LONG ISLAND CITY 1, NEW YORK

fifty-five years

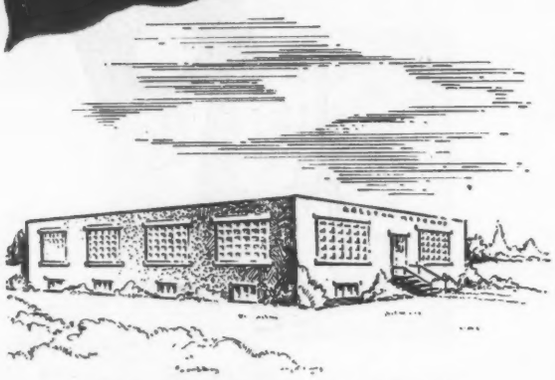
of continuous research maintains Ralston Superiority!



IT MAY WELL BE said that Ralston waterproof papers were born in the test tube, for in the very beginning and in all the ensuing years our laminated papers, crepe papers, coated papers, asphalt and specialty compounds as well as waxed papers have been the products of research.

The results of this continuous research program are shown in the forward progress of our two great plants . . . in the ready acceptance of Ralston products for every packaging need and in the acknowledged superiority of all our papers.

Today, we at Ralston have completed the construction of a new two-story research and development laboratory equipped with constant temperature rooms, experimental machines and all the latest laboratory equipment. Our Technical Director, E. G. Mullen, with other nationally known research engineers, is ready at all times to assist you with your packaging problems. A letter will start our laboratory working on them.



This, our new laboratory located at Old Bridge, New Jersey, is dedicated to serving you.

W. Ralston & Co., Inc.
Niagara Falls, N. Y.

Founded 1890—Incorporated 1918

Saturated Papers — Building Papers — Reinforced Papers — Duplex Papers — Case, Barrel and Bag Liners — Creped Papers — Laminated Specialties
Sales Office—220 E. 42ND STREET, NEW YORK, N. Y.

Glass

ADAPTABLE TO A WIDE VARIETY
OF CLOSURES . . .

For Assurance

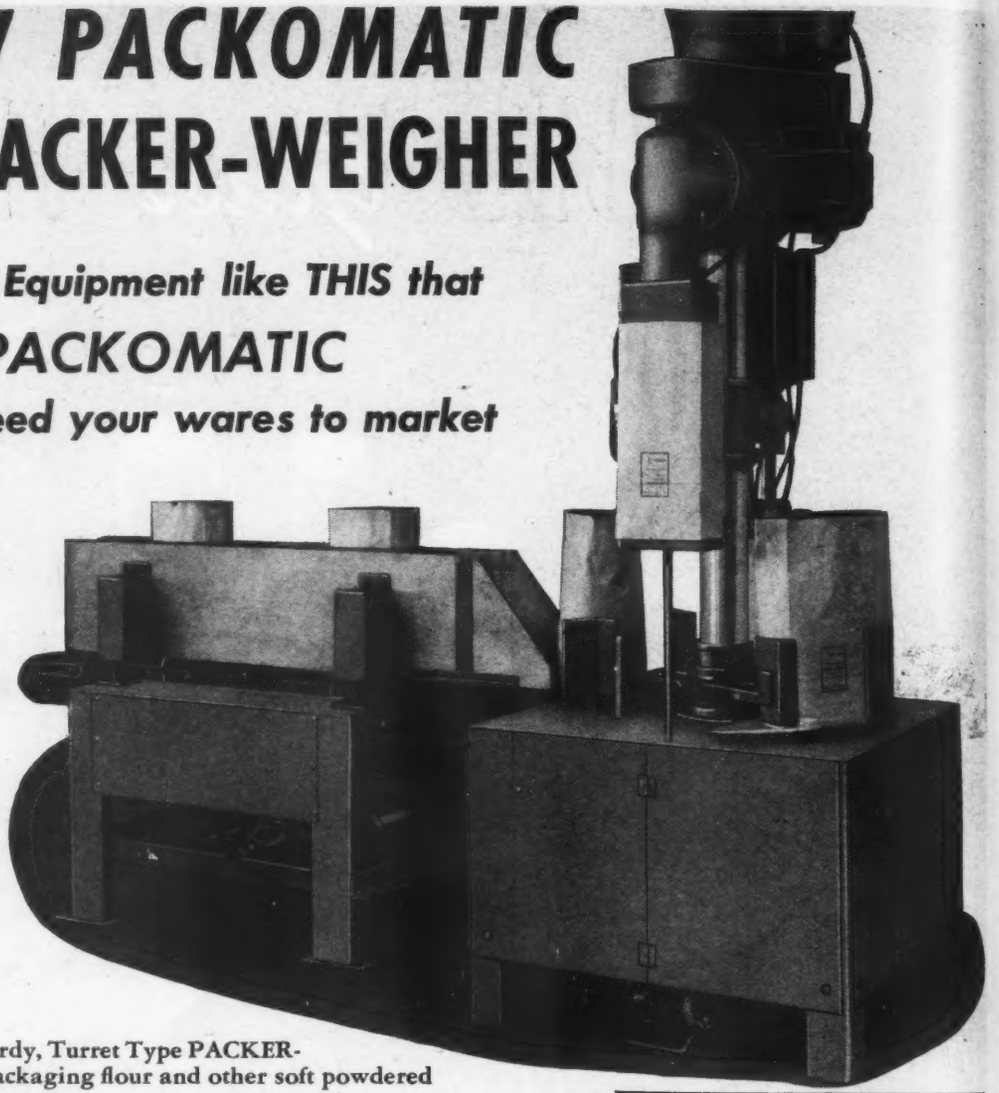
• • • *The Visible Guarantee of Invisible Quality* • • •

The NEW PACKOMATIC AUGER PACKER-WEIGHER

It's with Equipment like THIS that

PACKOMATIC

helps speed your wares to market



- ECONOMICAL
- CONVERTIBLE
- SIMPLE
- AUTOMATIC

Pictured above is the new, sturdy, Turret Type PACKER-WEIGHER that is ideal for packaging flour and other soft powdered products into bags, cans, or cartons.

This fully automatic packer fills approximately 90% of the total net weight into the container at the first station. The partially filled container then is automatically lowered and transferred onto the platform of the gross weigher where the filling operation is completed. The filled container is then delivered to the discharge turret plate. Only one operator is required to register the container on the packing station tube.

This adjustable PACKER-WEIGHER handles containers from 6″ to 22″ high, and weights from 1 lb. to 25 lbs. depending upon the product and container size . . . Interchangeable augers and tubes make possible the simple switch from one container size or weight to another.

OTHER DESIRABLE FEATURES INCLUDE: Adjustable drive for lowering of packing platform to provide for density of pack required . . . Provision for additional stations for plunging or settling . . . Non-choke horizontal spiral feed of product to both bulk and dribble augers . . . Individual motor drives with reverse switches for instant cut-off.

For better packaging tomorrow consult PACKOMATIC today. Your Metropolitan Classified telephone directory will give you the location of the nearest PACKOMATIC office. Advice and counsel is yours with absolutely no obligation.

TYPICAL PACKOMATIC EQUIPMENT

Case Sealers
Case Imprinters
Carton Sealers
Volumetric Fillers
Net Weight Scales
Carton Making Machines
Dating (Coding Devices)
Paper Can Tube Cutters
Paper Can Tube Gluers
Paper Can Shrinkers
Paper Can Cappers
Paper Can Set-up Conveyors

PACKOMATIC

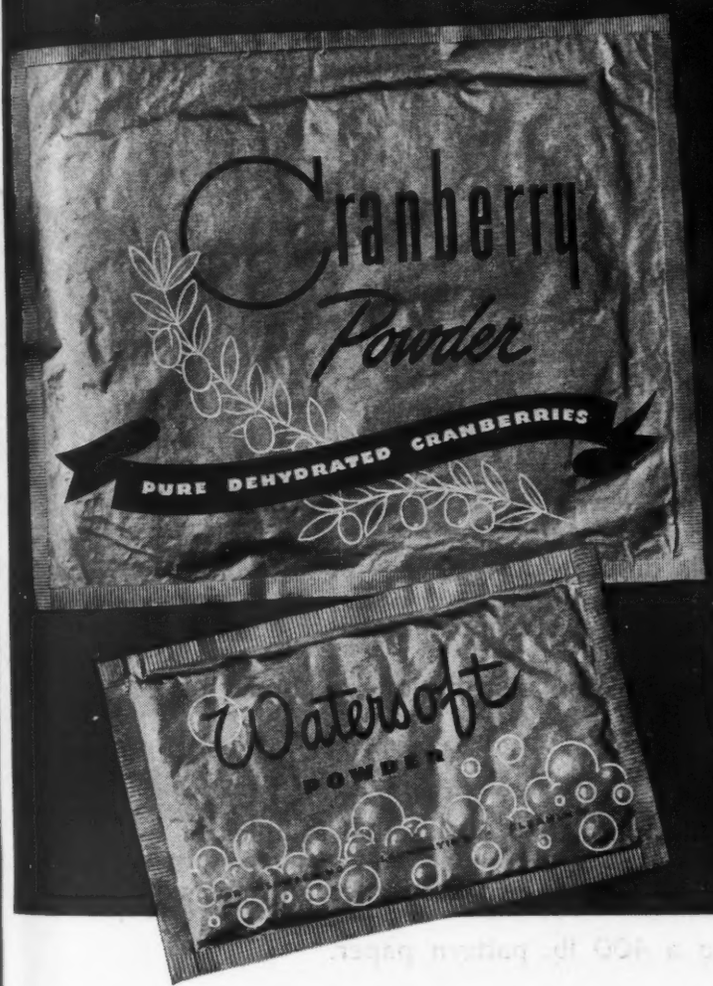
PACKAGING MACHINERY

J.L. FERGUSON CO. JOLIET, ILL.

New York • Chicago • Boston • Cleveland • Denver • Los Angeles • San Francisco • Seattle • Baltimore • Philadelphia

A SURE WAY TO

KEEP YOUR POWDER DRY



Designed by
STOKES & SMITH CO.
using
ALCOA
Aluminum Foil

How sure do you want to be that moisture-vapor will not get into your product?

If you want the *utmost* protection for a dry powder, here is a way to get it . . . a heat-sealed packet made from Alcoa Aluminum Foil. It will keep the most moisture-sensitive powder dry for months.

Furthermore, it will not permit sifting. It is easy to open and use. The correct amount of powder needed for use at one time can be packed in individual packets that will stay fresh until opened.

Eye appeal is another advantage. By combining colorful printing with the natural sparkle and glamour of foil, a package of striking beauty and high attention value is achieved.

No longer restricted to the war packaging jobs that it did so surpassingly well, Alcoa Aluminum Foil is now freely available for this and other types of packages. Write ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALCOA ALUMINUM FOIL

Tastes in packaging materials differ widely—even for the same type of product—and rightly so. No two companies have identical packaging equipment, market areas, distribution methods or sales plans.

That is why Riegel has on file more than 600 actual samples of Riegel papers—all different—all with known properties and costs . . . from a 16 lb. glassine to a 400 lb. pattern paper.

It is a gigantic library of experience that saves shopping time and experimentation. To get the right answer first—ask Riegel.

600 RIEGEL PAPERS

The Riegel sample files contain more than 600 different grades—a gold mine for the paper buyer who wants the best possible combination of protection, production efficiency and economy, to meet his own individual requirements. We make glassine, greaseproof, sulphite, wet-strength — printed, embossed, resin-impregnated, laminated, oiled, lacquer-coated, waxed, dry-waxed — packaging papers, converting papers, printing papers and industrial papers in endless variety.

RIEGEL PAPER CORPORATION · 342 MADISON AVENUE · NEW YORK 17, NEW YORK

TRADE-MARK ACTIVITY IN STORES AND HOMES

For over 50 years, women of America have depended upon KNOX for attractive, appetizing salads and desserts. During the major part of that time, it has been our privilege to collaborate creatively in keeping the KNOX trade-mark active. Point-of-purchase displays, and booklets and folders, with all the eye appeal modern design and intriguing full-color illustrations can impart, have reminded shoppers of KNOX SPARKLING GELATINE, and have helped homemakers get maximum benefit out of this top-quality product. We can help YOU plan NOW for vital postwar selling.

FORBES LITHOGRAPH CO.

NEW YORK CLEVELAND CHICAGO ROCHESTER

P. O. Box 513 Boston 2

"The bigger the family—the better the service"

THE greater the variety, too—especially if the family is big like Continental's. Our new packaging service is based on a combination of experience, technical skill, designing and engineering "know-how", with increased resources and facilities. This combination assures you of getting the *best* package for your product.

Continental now covers every phase of safe packaging—metal containers, liquid-tight paper cups and containers, fibre cans and drums, steel pails and other heavy-duty containers.

Uncle Sam is still our chief customer. But keep your eye on Continental! And on Continental's trademark, too! The Triple-C stands for *one* company with *one* policy—to give you only the very best in quality and service.

Tune in: "REPORT TO THE NATION" *every week over coast-to-coast CBS Network*

Continental Fibre Cans — These composite cans (with fibre bodies and metal ends) meet a definite packaging need. They bridge the gap between all-metal cans and paper containers, folded boxes or bags. They're made for easy conveyor and filler handling, in a wide range of shapes, sizes, and diameters, with a great variety of metal dispensing closures—"naturals" for safe shipping of drugs, cosmetics and chemicals.

CONTINENTAL CAN COMPANY, INC.

CONTINENTAL PAPER DIVISION

FIBRE DRUMS The Container Co., Van Wert, Ohio

LIQUID-TIGHT FOOD CONTAINERS — Boothby Fibre Can Co., Roxbury, Mass.

PAPER CUPS AND FOOD CONTAINERS — Mono Containers, Newark, N. J.

COMBINATION PAPER AND METAL CONTAINERS

Headquarters: 330 W. 42d St., New York 18, N. Y.

13 Plants — Sales offices in all principal cities

A trip to the moon, or a flight on a cloud . . . all are wrapped in one small package designed by WARNERCRAFT. But . . . WARNERCRAFTSMEN don't dream dreams — they build them!

In our designing rooms and on the production line, you will find us working with the latest in packaging materials in the development of dainty, re-usable cosmetic boxes for Her, to sturdy containers that appeal to Him . . . in every instance giving the product complete protection and a setting that promises to fulfill a dream of new markets and increased sales.

So . . . if your dream is winning post-war markets, let WARNERCRAFTSMEN design and build a package for your product that will make that dream a reality.

Warnercraft Tekwood* is one of the many new packaging improvements developed by Warnercraftsmen for post-war use. Light in weight as cardboard, yet many times as strong, it is adaptable to any type of covering. It is especially suitable for boxes intended for re-use.

*REG. U. S. PAT. OFF.

WARNERCRAFT

"THE FINEST WORD IN PACKAGING"

Makers of set-up and folding boxes of all types, transparent acetate containers, hand made specialties, counter displays and dispensers.

THE WARNER BROTHERS COMPANY

Main Office and Factory: 325 Lafayette Street, Bridgeport, Conn.
New York Sales Office: 200 Madison Avenue, New York, N. Y.

Coated Li

Lithwite Cartons

SPEAK UP... AND SELL

THAT'S WHY SMART MERCHANDISERS WANT THEM, LIKE THEM . . . PREFER THEM TO "SILENT SALESMEN"

BRING THE GOODS closer to the customer! Let the package do a self-selling job! That's the idea in today's modern stores . . . and that's the reason the "Silent Salesman" package is on its way out. Wide-awake merchants want, *and feature,* products packaged to speak up and sell . . . products packaged in *Coated* Lithwite.

This machine-coated paperboard, pioneered by Gardner-Richardson six years ago, gives cartons a sparkling beauty, a dash and a color-brilliance that makes them stand out in any display. *Coated* Lithwite's surface is chalk-free and velvet-smooth —reproduces product pictures with a startling realism that speaks right out and stops shoppers.

When can you get Coated Lithwite cartons? That's not easy to answer. Right now, the backlog of Coated Lithwite orders in the Gardner-Richardson carton plants is tremendous. Leaders in the field of merchandising are pushing us to capacity to get the sales advantages of cartons made of this revolutionary paperboard. However, here's a suggestion: get in touch with a Gardner-Richardson sales representative and discuss the matter of future delivery.

NOTE THESE OUTSTANDING COATED LITHWITE ADVANTAGES

1. Made by a revolutionary process. *Coated* Lithwite is the brighter, whiter paperboard that is formed, made and coated in one high-speed operation. Proved and improved for six years.

2. Means more eye-appealing cartons. *Coated* Lithwite's smooth, velvety, chalk-free surface forms a better base for printing inks and plates—reproduces even the smallest type cleanly, crisply. Brings colors up brilliantly —gives halftones a sharp realism.

3. Fewer jammers and leakers. *Coated* Lithwite scores without flaking or shattering. Takes a positive, tight seal.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA · CLEVELAND · CHICAGO · ST. LOUIS · NEW YORK · BOSTON · PITTSBURGH · DETROIT

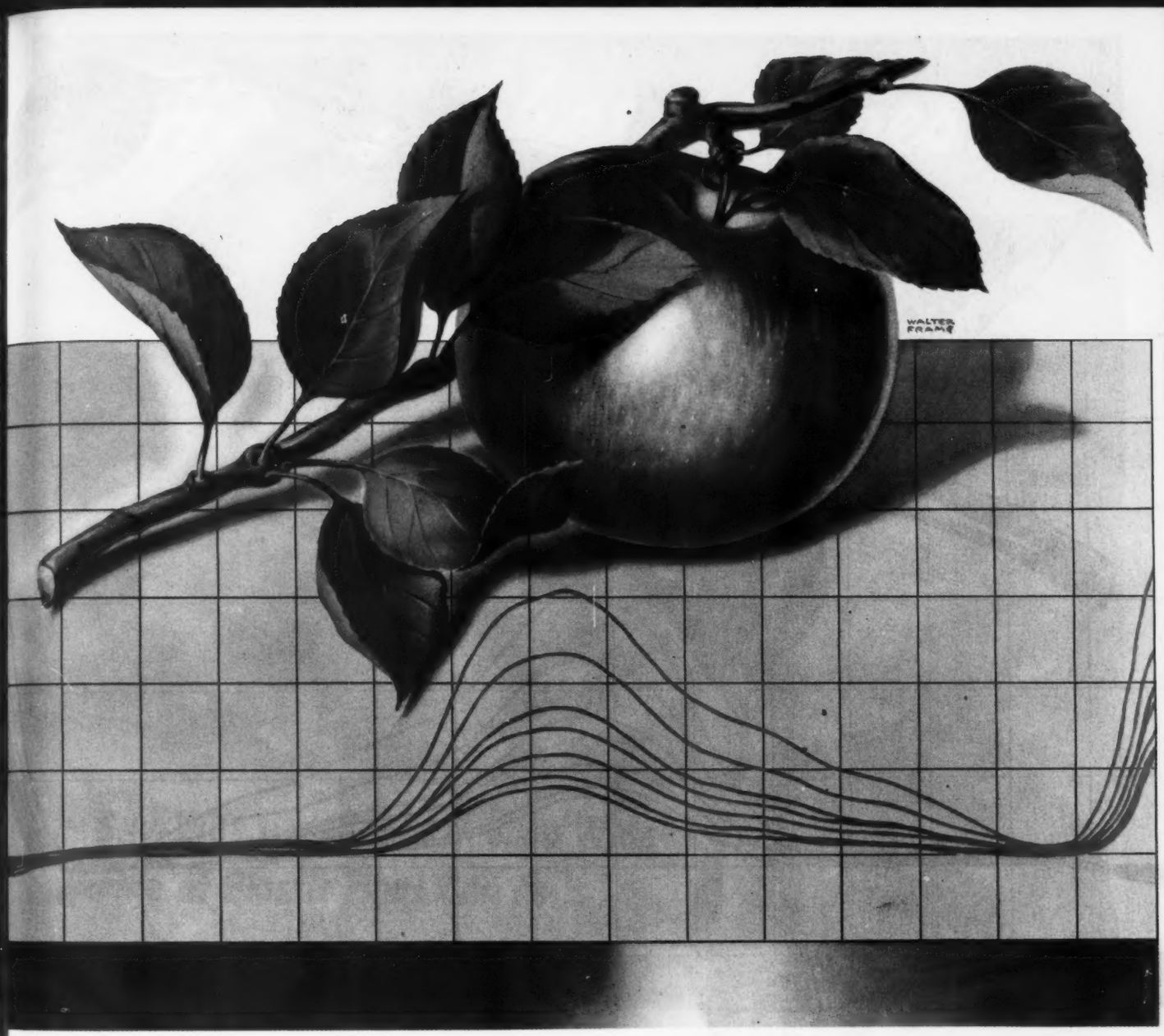
HOSPITALITY KING SIZE

When the gang is coming in for an early fall barbecue supper . . . it's time to match robust appetites with food that makes a hit all around. Savory barbecue sandwiches . . . steaming coffee . . . and all the fixings, like Haase's Barbecue Sauce. Haase's Spanish Olives are another favorite of experienced hostesses . . . man, they're colossal . . . king size hospitality.

These popular products are packed by the A. C. L. Haase Co., of St. Louis, Mo. You can tell at first taste that here is a company that really believes in superior quality. Come to think of it, maybe that's why they selected Crown Lug Caps and Crown Screw Caps as the best seals for their products. The quality of Crown Closures is outstanding, too. Crown Cork & Seal Company, Baltimore 3, Md.

World's largest makers of metal closures.

CROWN CLOSURES



They picked a Better Apple in the Garden of Science

IT STARTED when the Pomology Department of a State College of Agriculture found that the color of McIntosh apple leaves and the quality of the fruit depends in part on the amount of nitrogen in the soil. The problem was to set up color standards which would enable apple growers to determine whether their trees were receiving sufficient nitrogen fertilizer to produce the finest fruit.

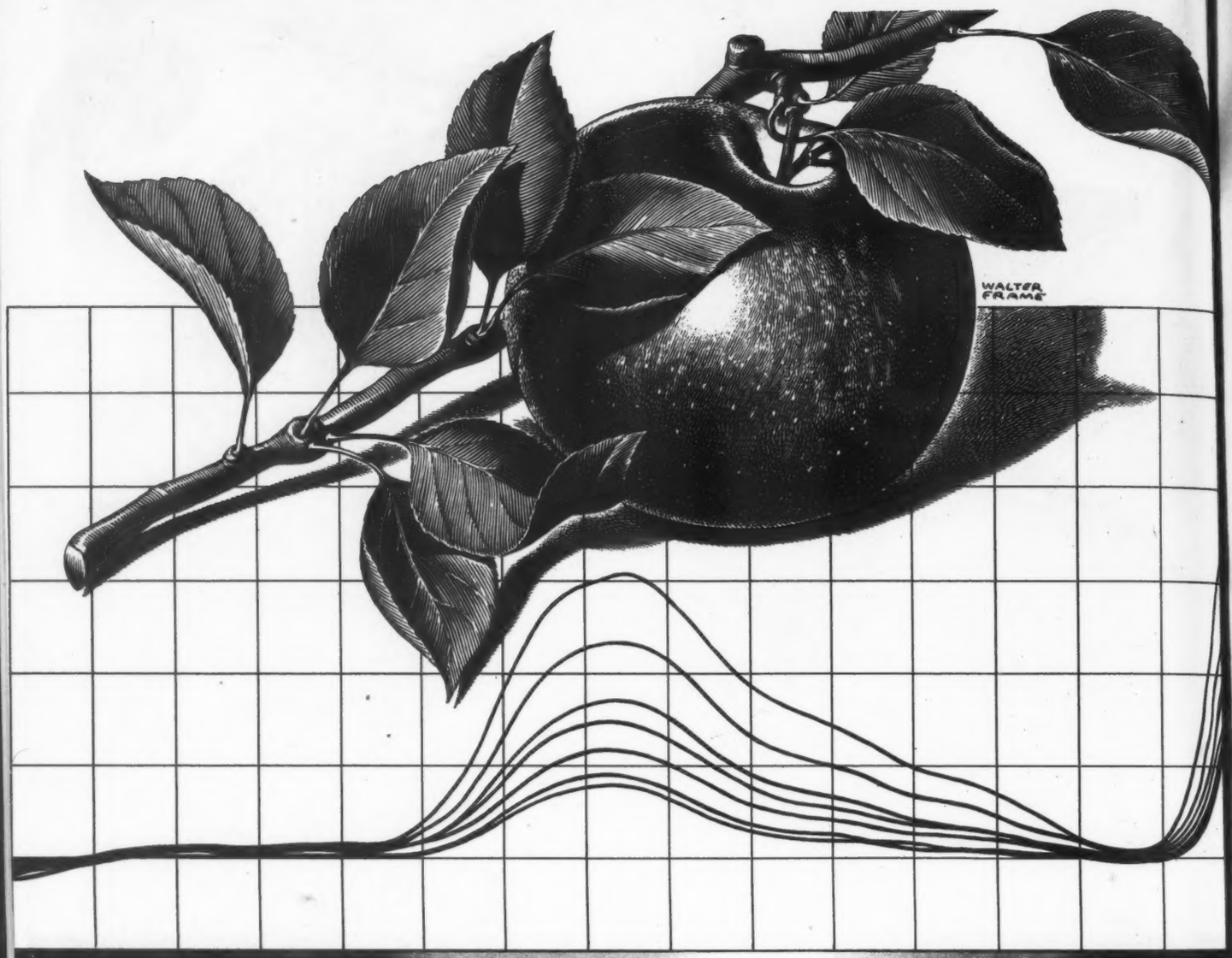
A series of carefully selected leaves was measured on the Recording Spectrophotometer at our Interchemical Research Laboratories. This remarkable instrument recorded accurate curves for seven leaf colors. From these curves, technicians of International Printing Ink formulated inks which duplicated the leaf colors. Handy color guides will indicate soil conditions for each tree in an orchard. By comparing the leaves of his trees with these ink colors, the apple grower can discover the nitrogen needs of his trees.

COLOR CONTROLS

This is but one of the many examples of the way I.P.I., through its extensive research facilities and its wide background of experience, is equipped to measure color accurately and set up color uniformity controls. In both offset and letterpress these color standards are proving extremely useful in the printing of packages, labels, direct mail catalogs, publication and commercial printing.

If you would like a copy of the Apple Leaf Laboratory report, write to: International Printing Ink, Division of Interchemical Corporation, 350 Fifth Avenue, New York 1, N. Y.

ipi



They pick ipi for Offset Colors and Blacks

IPI Offset Halftone Blacks are unlike any other offset blacks ever made. They are the result of a long study of vehicles, solvents and pigments in new formulations which produce superior results in offset lithography.

The printing ink industry has searched for years for a black which would produce a deep color and lithograph sharply. IPI Offset Blacks meet this demand and in addition have these superior qualities and characteristics:

Every IPI Offset Halftone Black is an aged ink, manufactured under an exacting, controlled procedure.

IPI Offset Halftone Blacks employ new ingredients.

IPI Offset Halftone Black inks have good drying properties.

IPI Offset Halftone Blacks lithograph sharply and cleanly. (Compare them with the best black you are now using.)

A Redshade (OA-11), Greenshade (OA-12), a Dull Black (OA-13) and a Publication Black (OA-14) are included in this line.

All IPI Offset Halftone Blacks follow the fountain and have been thoroughly pretested on commercial offset presses normally used in the trade.

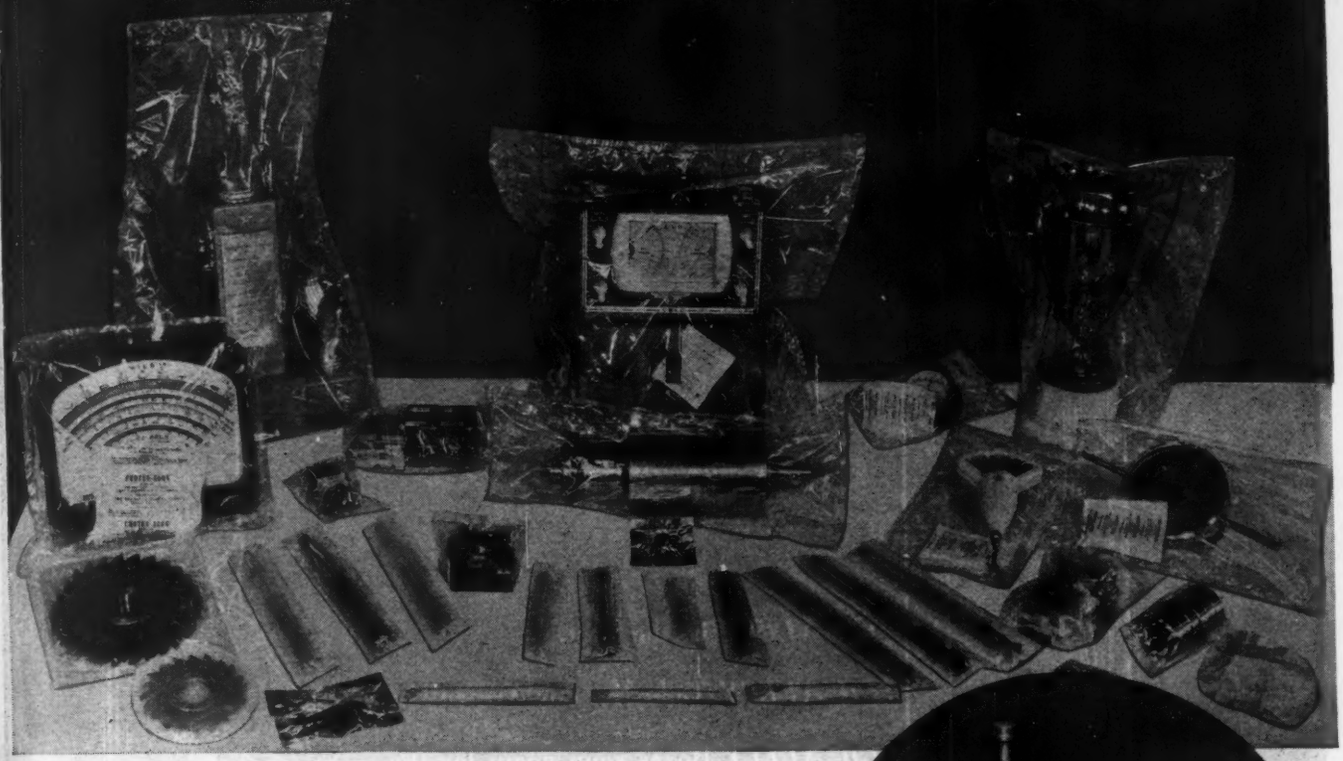
IPI OFFSET PROCESS INKS

The IPI Offset Process inks used in printing this insert will be found generally satisfactory for four-color offset lithography. The pigments used will provide the widest gamut of colors for mixtures on the basis of spectrophotometric readings. They are the nearest to the ideal subtractive primaries within the limitations of the offset lithographic process. Over a wide range of subjects the Standard IPI Offset Process Inks will produce the best average reproduction of four-color offset work. Reproductions from Kodachrome color photographs can be faithfully lithographed with these process inks.

Special cases will require adjustments of these standards, and IPI representatives are in a position to advise the lithographer in these cases and to match special progressive proofs.

Send for your copy of the IPI Offset Color Guide and the IPI Offset Process colors mixture chart. Address: International Printing Ink, Division of Interchemical Corporation, 350 Fifth Avenue, New York 1, N. Y.

Here's what it does!



The Sav-Way Heat Sealer Seals a Wide Range of Plastic Films and Foils

The Sav-Way Heat Sealing Machine, developed to meet the critical requirements of wartime packaging, is destined to make history in the protective packaging field.

The Sav-Way principle, which produces an air-tight, moisture-proof welded closure, is adaptable to a wide range of plastic films and foils, and to an almost endless variety of packaging methods. The Sav-Way machine has been thoroughly proven in line production. It is readily adaptable to your own requirements.

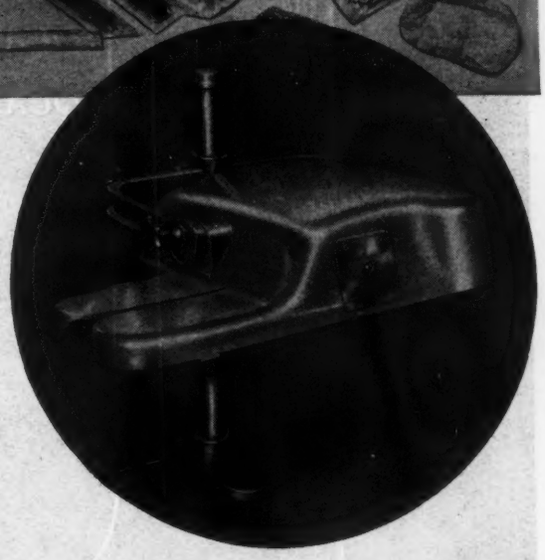
For technical consultation write, wire, or phone. We shall be glad to send a sales-engineer at your convenience.

DISTRIBUTOR TERRITORIES OPEN

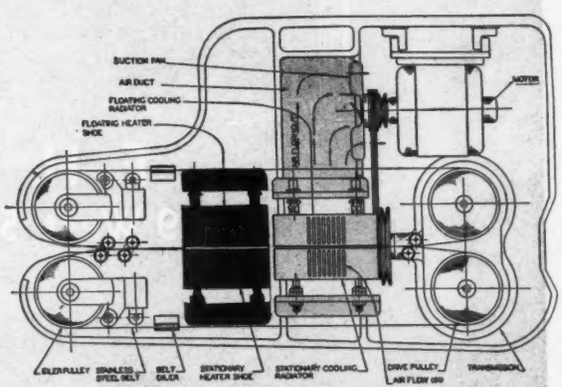
Sav-Way

SAV-WAY INDUSTRIES

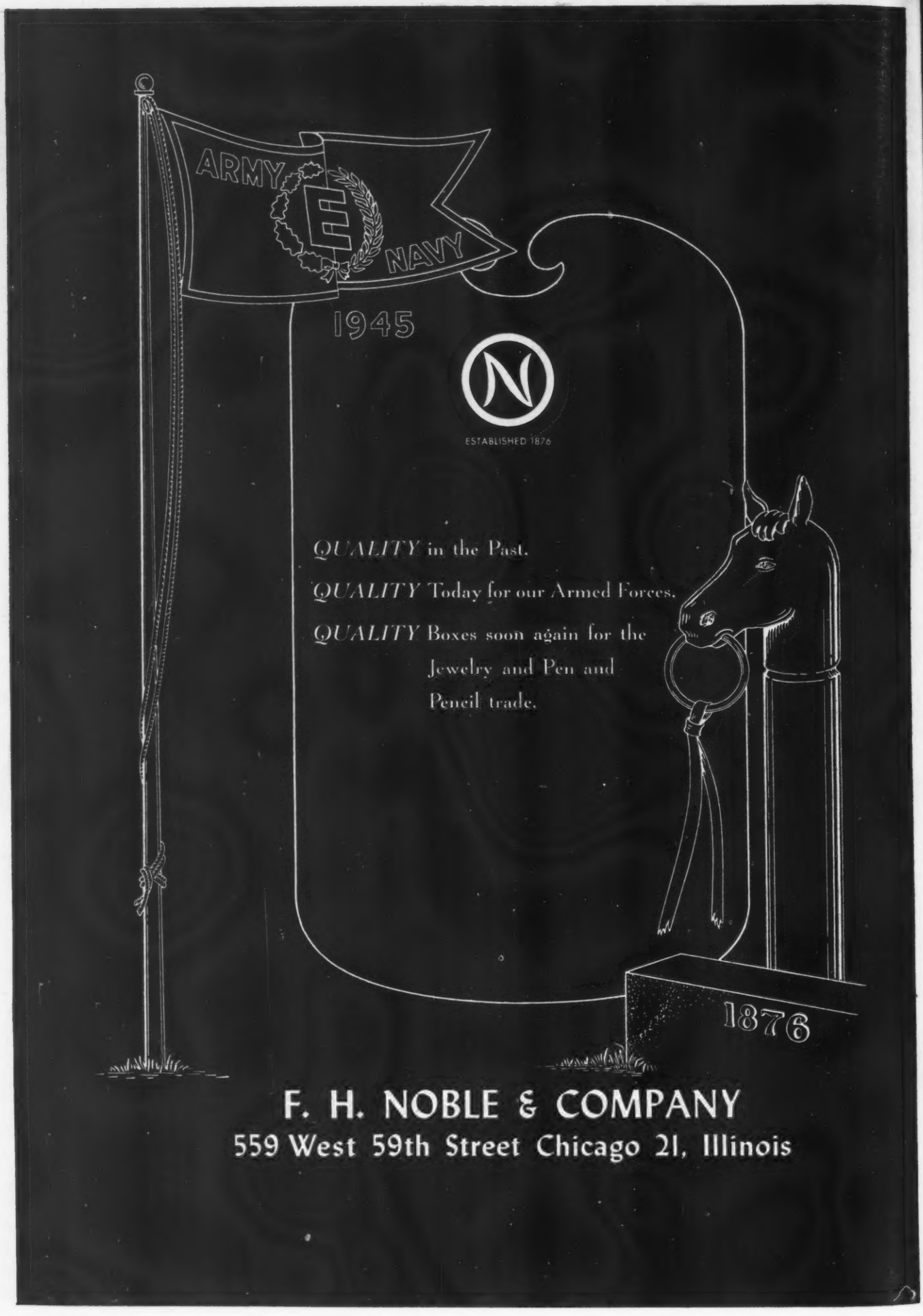
BOX 117, HARPER STATION, DETROIT 13, MICHIGAN



The Sav-Way sealing mechanism is contained in this streamlined head which is adjustable to practically any position.



Plan view of sealing mechanism including temperature, pressure, and time control. Solid blue indicates heater; light blue the cooling mechanism.



F. H. NOBLE & COMPANY
559 West 59th Street Chicago 21, Illinois

Help make up the lady's mind

Give her a chance to see your product quickly, by packaging it in lustrous, brilliant film or foil, attractively processed by Dobeckmun. Transparent film allows her to compare the merchandise and helps make up her mind. Where the extra protection of foil is needed, faithful color reproductions can picture the contents. Both film and foil can carry strong selling messages and instructions.

Ask our technical and creative staff for ideas and suggestions that will help make up the lady's mind. Then you'll be ready for production when critical materials are available. *The Dobeckmun Company, Cleveland 1, Ohio. Branches at Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco and Seattle. Representatives everywhere.*

CLEVELAND PLANT

SELF-SELLING PACKAGES IN

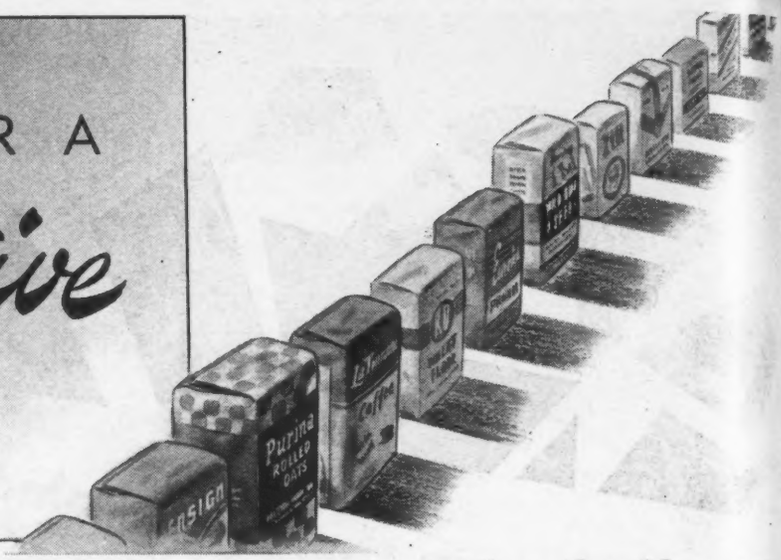
DOBECKMUN

PROCESSED FILMS AND FOILS

LOOKING FOR A

Cooperative

PACKAGE?



We believe that every container should *cooperate* with the product it carries—guard and protect it while it's waiting to be used by the ultimate consumer. Such a package is Royal's

"FLAV-O-TAINER"

—the patented duplex bag that is heat sealed on all seams, providing *unusual protection* against air, moisture, grease and odors.

This sturdy, dependable container will be available soon in a variety of Royalflex films: SELLOFLEX (Cellophane laminated to itself or to other material), LUMIFLEX (aluminum foil laminated to other material), PLIOFLEX (Pliofilm laminated to itself or to other material) DUOFLEX (moisture-proof coated glassine laminated to itself.

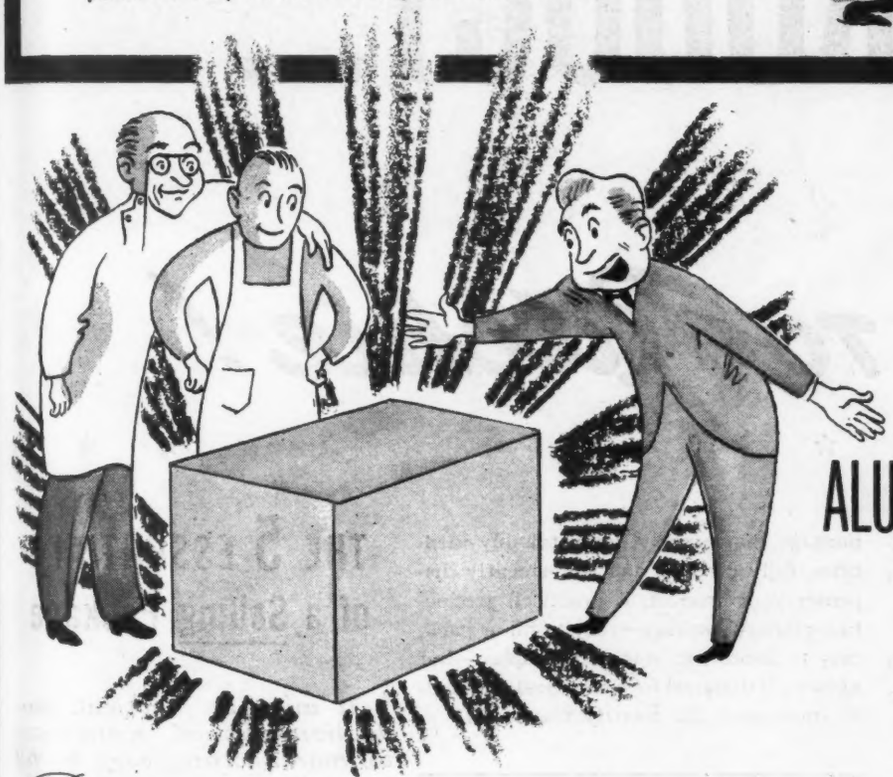
Whatever your packaging problem we shall be very glad to help you solve it—and to work with you now in the designing and experimenting that plays so important a part in successful packaging.

THOMAS M. ROYAL & COMPANY • *Philadelphia 20*

BOSTON • CHICAGO • SAN FRANCISCO • BEAUMONT • ATLANTA • PITTSBURGH • NEW ORLEANS
DENVER • SEATTLE • NEW YORK • ST. LOUIS • DAYTON • DETROIT • SYRACUSE • BRYN MAWR

Keep Moisture in its Place!

It's well known how effectively aluminum foil can keep moist things moist and dry things dry . . . but unless that package is heat sealed with the proper coating, maximum moisture-vapor protection is not possible. Keep moisture in its place with . . .



SYNTRON ALUMINUM HEAT SEAL COATING

By coating aluminum foil with SYNTRON Heat Seal Coating . . . the open ends of the package can be more perfectly heat sealed . . . a solid barrier can be set up between the contents and the attacking atmosphere, giving the maximum amount of moisture protection. SYNTRON Heat Seal Coating for aluminum foil, specially developed for maximum sealing strength for all types of aluminum foil bags and packages is waterproof, is non-toxic, colorless, odorless, oil, acid, alcohol and alkali resistant. Block-above 135° fahrenheit under 1lb. pressure per square inch. SYNTRON is just one of the many coatings developed by the Gordon-Lacey laboratories for use on paper, wood, plastic, fabric, metal, etc. Write for full information concerning your protective coating problems.

*TRADE MARK

GORDON-LACEY CHEMICAL PRODUCTS CO.

57-02 48th STREET • MASPETH, NEW YORK • Phone: ST 4-0623

BEFORE YOU PACKAGE THAT NEW PRODUCT...

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

TALK TO Ritchie!

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

NOT ONLY because Ritchie's low-cost, volume-production facilities can save you money . . .

NOT ONLY because Ritchie's 79 years packaging leadership provides the "know how" of efficient material and structural design . . .

NOT ONLY because Ritchie excels in producing packages that live retailers prefer to display . . .

BUT BECAUSE Ritchie will give you, in addition to low cost and functional efficiency, a package that stands out—that people will see, ask about, reach for—a package that *sells!*

WAY TO A BETTER PACKAGE. The Ritchie way integrates art and artisanship—to give you a better package at a low unit cost. A package that quickly, unmistakably identifies, fully protects and conveniently dispenses your product. A practical, production-planned package—easy to fill or pack, easy to handle, to stack and display—but *above all* designed for eye-appeal, for quality-impression, for *beauty that sells!*

W. C. Ritchie AND COMPANY

8849 Baltimore Avenue • Chicago 17

- **Set-Up Paper Boxes**
- **Fibre Cans**
- **Transparent Packages**

THE 5 ESSENTIALS of a Selling Package

1 *It must be practical, production-planned, economical to manufacture, easy to fill or pack.*

2 *It must fully protect and conveniently dispense the product.*

3 *It must be easy to handle, to stack and display.*

4 *It must proclaim the quality and identity of your product.*

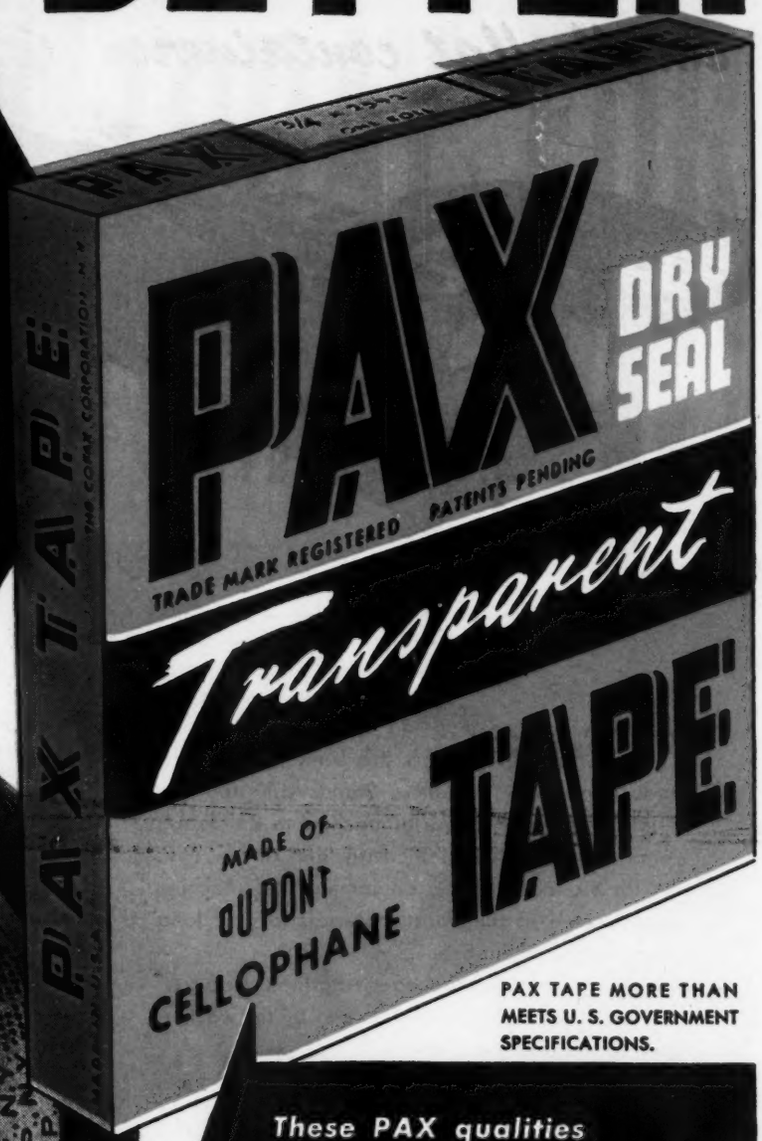
5 *It must be "good looking," memorable, ATTRACTIVE!*

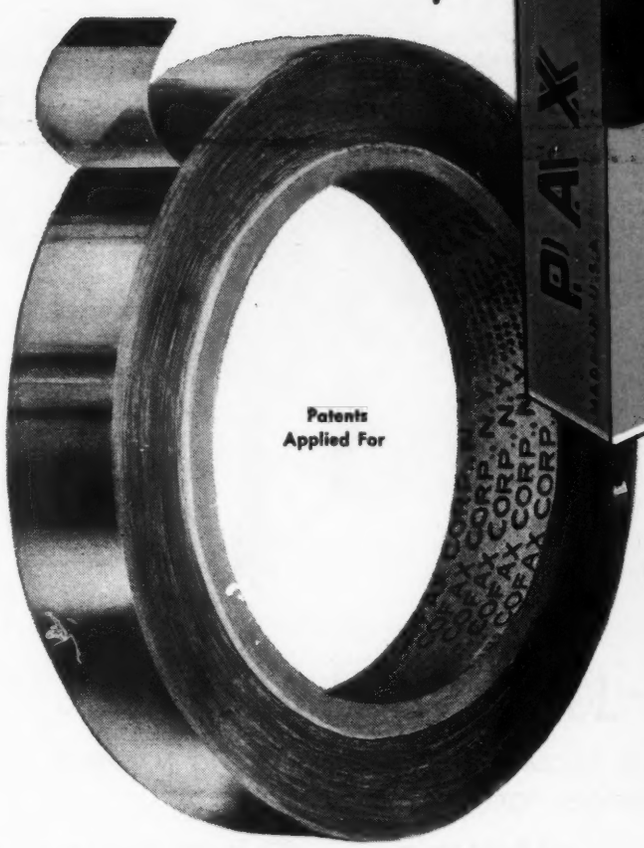
NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

NEW and BETTER

PAX TAPE marks a distinct advance in pressure sensitive tape. Test and use prove it a superior product.

PAX superiority in performance is due directly to the new formula and the original process by which it is made.





PAX TAPE MORE THAN MEETS U. S. GOVERNMENT SPECIFICATIONS.

These PAX qualities challenge comparison:

- Has greater tensile strength
- Gives stronger adhesion
- Edges always remain dry
- Rolls never telescope
- Lasts longer; keeps indefinitely
- Need not be stored in metal boxes

NOW AVAILABLE IN LARGE RANGE OF COLORS

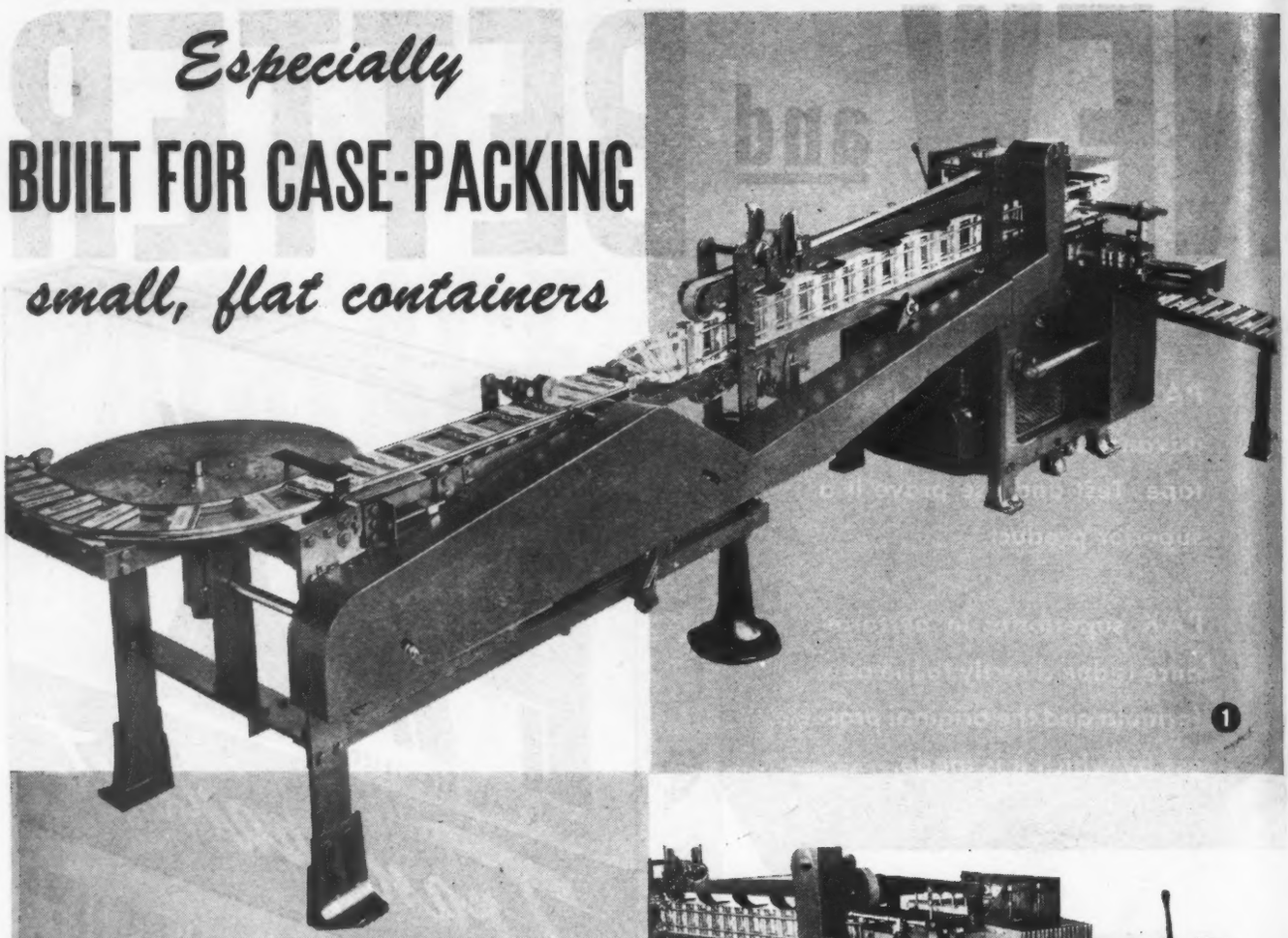
A product of

THE COFAX CORPORATION NEW YORK OFFICE: 50 EAST 42ND STREET, NEW YORK 17, N. Y.

Especially

BUILT FOR CASE-PACKING

small, flat containers



The case-packing of small, flat packages is the bane of many a production man's existence. Standard-Knapp has designed and built a special machine to do the job —and to do it quickly, efficiently and at low cost. Like all Standard-Knapp equipment, this machine is constructed of the finest materials to give long life at low maintenance.

Figure 1 shows the packages entering the packer. They are lying down, turned on end by the packer, taken to the packing end.

Figure 2 shows the packing end of the machine. Note special funnel for inserting flat packages in case.

Standard-Knapp specializes in designing and building special equipment to perform difficult operations automatically.

STANDARD-KNAPP CORP.

MANUFACTURERS OF CASE SEALING, CASE PACKAGING AND CAN LABELING MACHINES

FACTORY and GENERAL OFFICES—PORTLAND, CONNECTICUT

570 Lexington Avenue, NEW YORK 22, N. Y. — 221 North LaSalle St., CHICAGO 1, ILL. — 145 Public Square, CLEVELAND 14, OHIO — 300 Seventh Street, SAN FRANCISCO 3, CALIF.

420 S. San Pedro Street, LOS ANGELES 13, CALIF. — 3224 Western Avenue, SEATTLE 99, WASH. — 1208 S. W. Yamhill Street, PORTLAND 5, OREGON — Paul Brown Building, ST. LOUIS 1, MO

Windsor House, Victoria Street, LONDON, ENGLAND

PACKAGES BY MILPRINT EYE-APPEAL TODAY FOR BUY-APPEAL TOMORROW!

Awarded to MILPRINT Inc.
War Products Division

For the tough competition of peace-time buying you will need, and want, every sales weapon at your disposal...and the most vital of these will be your package. PACKAGES BY MILPRINT are designed for competition...expertly blending vivid colors with dynamic design and powerful display values for the eye-appeal your package needs to sell itself.

Plan that eye-appeal today...for buy-appeal tomorrow!

MILPRINT Inc.

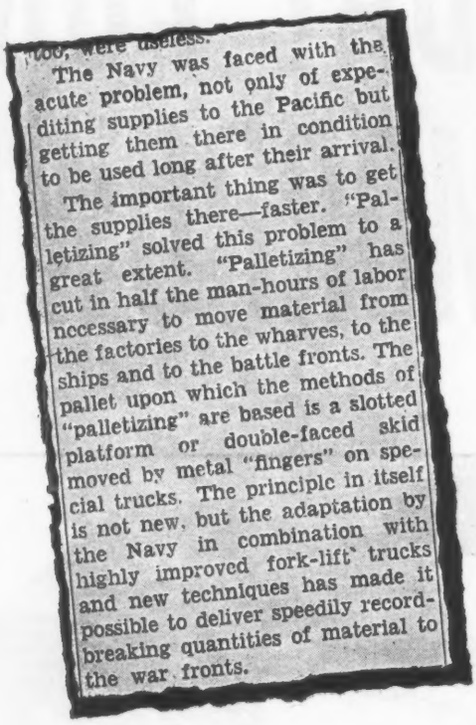
PACKAGING CONVERTERS • PRINTERS • LITHOGRAPHERS

Plants at Milwaukee, Philadelphia, Los Angeles, Tucson • Sales Offices: New York, Chicago, Boston, San Francisco, Philadelphia, Grand Rapids, Los Angeles, Cleveland, Dallas, Minneapolis, Cincinnati, Atlanta, Pittsburgh, St. Louis, Indianapolis, Kansas City.

WAR'S "SECRET WEAPON"

now available to industry . . . .

REPRINTED FROM THE
NEW YORK HERALD TRIBUNE
May 6, 1945



...too, were useless.

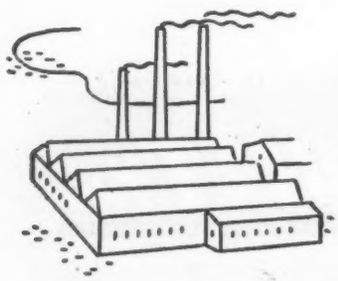
The Navy was faced with the acute problem, not only of expediting supplies to the Pacific but getting them there in condition to be used long after their arrival.

The important thing was to get the supplies there—faster. "Palletizing" solved this problem to a great extent. "Palletizing" has cut in half the man-hours of labor necessary to move material from the factories to the wharves, to the ships and to the battle fronts. The pallet upon which the methods of "palletizing" are based is a slotted platform or double-faced skid moved by metal "fingers" on special trucks. The principle in itself is not new, but the adaptation by the Navy in combination with highly improved fork-lift trucks and new techniques has made it possible to deliver speedily record-breaking quantities of material to the war fronts.

Know how "PALLETIZING" *solved the Navy Department's gigantic task of materials handling.*

Now, private industry can avail itself of the ingenious methods perfected by the experts called in by the Navy. In this respect, Pallet Sales Company proudly announces that ***Curtis H. Barker, Jr.*** *who was with the United States Navy as Technical Adviser of the Field Operations Branch has joined our organization.*

Many of America's largest plants are turning to Pallet Sales for an economical and speedy solution to their shipping and distribution problems. Your inquiry is invited. There is no obligation.



PALLET
sales company

122 EAST 42nd STREET, NEW YORK, N. Y.

It will pay you to look into LUMARITH

CONTINUOUS BEADED STRIP PACKAGING

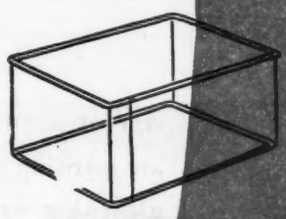
Unlimited shapes . . . unlimited sizes

1. LESS WEIGHT **2. INCREASED RIGIDITY**
3. LOWER COST **4. FASTER PRODUCTION**

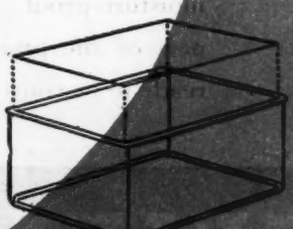
For a powder puff or a blanket this basically different method of forming transparent Lumarith packages will appeal to the production man. Continuous strips of Lumarith C.A. (cellulose acetate) film are fed into the beader which crimps a bead on one or both edges. The beaded strips are cut into proper lengths, run through a creaser, formed into the desired wall shapes, and then cemented. Bottoms may be sheets of Lumarith, cardboard or other material, cut to make a tight tension fit supported by the lower bead. Tops are transparent Lumarith.

The beaded edge has several important advantages: serves as anchoring support for top and bottom, increases rigidity, permitting use of lighter stock, produces a smooth non-snagging edge. Lumarith films—tough, easy to form and draw, transparent, non-aging, greaseproof, dustproof, waterproof—are ideal for this method. Our technical staff will be glad to give you more information. Celanese Plastics Corporation, a *division of Celanese Corporation of America*, 180 Madison Avenue, New York 16, N. Y.

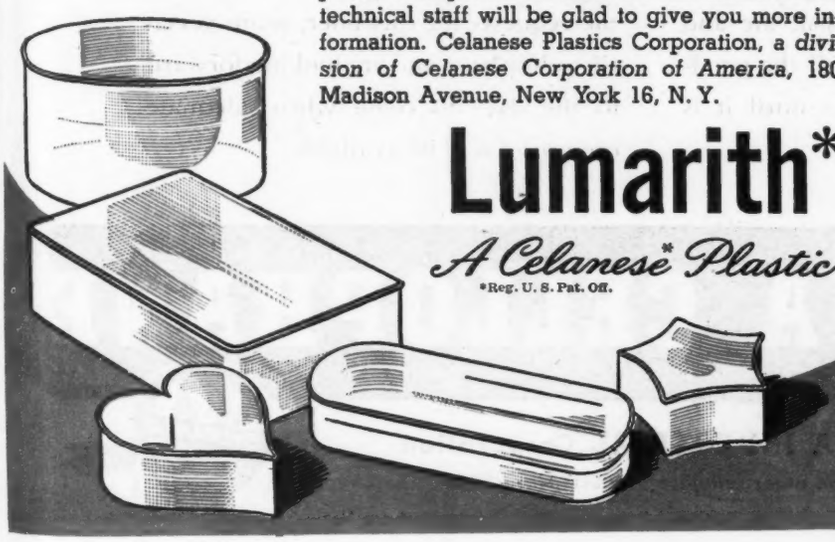
Lumarith strip with beaded edges—beads can be "one in, one out" or both in.



Creased and cemented, ready for cementing



Completed wall ready for insertion of bottom. Top is formed same way—usually only one edge being beaded.



Lumarith*

A Celanese Plastic*

*Reg. U. S. Pat. Off.

SYLVANIA means Cellophane

and *that* means freshness!

ALL OVER THE COUNTRY wise shoppers are learning that food protected by this glistening wrap is better, more flavorful. That's because Sylvania Cellophane seals freshness in . . . is dust, air and moisture-proof . . . keeps all the goodness of the product intact until it is ready to be consumed.

Today Sylvania Cellophane offers better protection to your product than ever before.

We would like to comply with all the requests for this finer, more versatile cellophane and are looking forward to the days to come when adequate quantities will be available.

SYLVANIA CELLOPHANE

Made only by SYLVANIA INDUSTRIAL Corporation

Manufacturers of cellophane and other cellulose products since 1929

General Sales Office: 122 E. 42nd St., New York 17, N.Y. ★ *Plant and Principal Office:* Fredericksburg, Va.

• Registered Trade Mark

Merchandising Tips—No. 5

Turnover depends on Eye Appeal!

MANY *good* products stay on the shelf because their attractive goodness or their visible quality is hidden from the eyes that do the buying. If you want to cut unprofitable shelf-sitting time to a minimum, send your product to market in revealing, modern dress—a clear, clean, inviting Anchorglass package!

Sales records show that consumers buy faster when it's in glass. Women everywhere know and want the honesty, the convenience and the protective safety of glass.

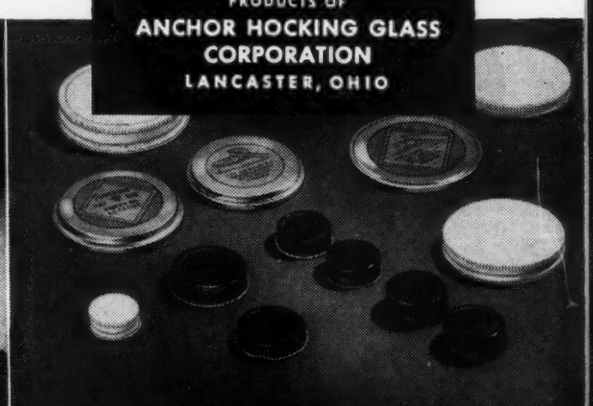
A crystal clear Anchorglass container plus a handsome, easy-to-use Anchor Cap—the best combination to speed turnover—will make your product a pleasure to use—and keep it good to the last bit.

Let our package engineers show you how to use Anchorglass packaging to best advantage in postwar markets.

Hear how Anchor Hocking is educating millions of your customers and retailers every week to the advantages of modern glass packaging—Tune in "Hobby Lobby" every Thursday evening, entire Coast-to-Coast Network, CBS.

Anchor
CONTAINERS and CAPS

PRODUCTS OF
ANCHOR HOCKING GLASS CORPORATION
LANCASTER, OHIO



PERMANENT

Surface Decorations On Every Type Of Package!

New Process Allows Integral Color Decoration of Plastics, Metal, Glass, Wood and other Surfaces

Creative's package decoration is proved permanent in actual use by the leading names in American packaging.

Scratch-proof, rub-proof, water and alcohol-proof decorations, trade-marks and designs on dials, bottles, plastic containers, etc.

No limitation on colors or design.

Send for samples and prices.

Creative

PRINTMAKERS GROUP

14 West 17th Street — NEW YORK 11 · CH 3-6800

Surface Decorators for the Packaging Field

How does your package fit into this picture?

In considering the effectiveness of your package be sure you take a look at it as the shopper will probably see it . . . on a self-service display counter. Will it capitalize on the selling opportunities presented?

Will it catch the shopper's eye? Transparent packaging lets your product catch and hold the shopper's eye. It shows just what your product is . . . displays its quality . . . suggests its advantages. You add a valuable sales builder when you select transparent Du Pont Cellophane. It helps your product sell itself!

Will it safeguard quality? The protective values of Du Pont Cellophane packaging will give the shopper extra reason for selecting your product. She knows from experience that moistureproof Du Pont Cellophane protects freshness and flavor . . . guards against contamination and spoilage.

Will it meet low-cost requirements? Packaging economy will help you give the shopper full value for her dollar. In Du Pont Cellophane you get the desirable combination of transparency plus protection at low cost.

Write for the booklet, "Help Yourself to Lower Distribution Costs," discussing functions of the package in today's merchandising picture. E. I. du Pont de Nemours & Co. (Inc.), Cellophane Div., Wilmington 98, Delaware.

DuPont Cellophane

Shows what it Protects—at Low Cost

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

LOOKING INTO THE FUTURE

When you think of bottles think of

Swindell

Machine made and hand made glass containers for cosmetics, drugs and beverages.

SWINDELL BROTHERS, Inc. BALTIMORE, MARYLAND

200 FIFTH AVENUE, NEW YORK ROBERTO ORTIZ—HAVANA, CUBA

FOIL IS BACK!

FOIL LABELS!
FOIL SEALS!
FOIL TAGS!
FOIL WRAPS!

Yes, we don't have to say much more—foil is back! Restrictions are lifted, you may have foil for whatever you need it!

Its lustrous surface, fine embossing properties and protection are once again available to all.

Our craftsmen know foil from way back. They know how to design it. They know how to make tools to handle it. They know how to color, print, and emboss it.

Our facilities are open to your requirements.

IN CANADA: CAMEO CRAFTS INC.,
157 ST. PAUL ST. WEST, MONTREAL

CAMEO
DIE AND LABEL COMPANY
DESIGNERS and CRAFTSMEN
154 WEST 14th STREET
NEW YORK 11, N. Y.
WATKINS 9-8484

TWO RESPECTED FIRMS JOIN HANDS TO DEVELOP AND PRODUCE BETTER AUTOMATIC PACKAGING MACHINERY

WHAT THIS MEANS TO YOUR COMPANY

Sperry Corporation Buys Half Interest In Wright's Automatic; Technical Resources Combined To Bring You The Automatic Packaging Machinery Needed If Your Company Is To Pay High Wages and Still Make Money.

★ Top Research

★ Top Production

★ Experienced Aid

Durham, N. C., Sept. 1—(AP)—President Thomas D. Wright announced that The Sperry Corporation today made a substantial investment in Wright's Automatic Machinery Company which doubles the capital structure of the Durham firm, a pioneer since 1893 in developing and manufacturing packaging machinery.

Negotiations were completed here by Wright's officials and Captain Thomas B. Doe, Sperry vice-president. The amount of Sperry's investment was not disclosed but ownership of Wright's is now on a 50-50 basis, it was learned.

The Sperry Corporation consists of Sperry Gyroscope Company, Inc., Great Neck, Long Island, N. Y.; Vickers Incorporated, Detroit, Mich., and Waterbury, Conn.; Ford Instrument Co., Inc., Long Island City, N. Y.; and Wheeler Wire Co., Bridgeport, Conn.

Captain Doe said, "Sperry's decision to enter the automatic packaging machinery field is based upon a conviction that American industry will need and use more and more labor serving machinery in order that American workmen can continue to receive high wages and short working hours and at the same time meet world competition."

"In the face of world competition the American system of high wages and short hours can progress only if America's workers are enabled to combine their skill with the finest labor serving machinery that science and research can provide," Doe stated.

AMONG THE NEW OR IMPROVED MACHINES which Wright's is now preparing to market are a weighing device which employs a principle new in packaging machinery; a machine which applies revenue strip stamps to bottles; machines for packing, labeling and stamping tobacco; a machine which wraps, seals and labels cracker sandwiches; a machine for weighing, packing and labeling dehydrated foods and other free-flowing materials. Wright's will also step up its tool room work such as making jigs, fixtures and special tools.

Wright's Automatic Machinery Co.

300 Calvin Street • Durham, North Carolina

"Pioneers Since 1893 In Automatic Packaging Machinery"

Sizeable Savings with New "Dry" Form Sealing Solvent W-51

Tanglefoot Sealing Solvent W-51 in the new "dry" form makes possible sharp reductions in package and packaging costs, lower freight and handling charges and virtual elimination of breakage—which result in a radically lower cost to you. It costs less to use, too, because it saves time and labor by making packaging so much faster and easier.

Order new "dry" form Sealing Solvent W-51 from your regular paper merchant, or send coupon below for free sample.

SEE THESE ADVANTAGES OF SEALING SOLVENT W-51 . . .

LET IT POUR

. . . Sealing Solvent W-51, when used with Solseal Tape provides complete water-resistant sealing. No moisture can enter through the seal . . . tape will hold firmly without peeling or buckling.

HOT OR COLD

. . . Tests have shown that, when applied with Sealing Solvent W-51, Solseal Tape will hold firmly even under extremes of temperature. Tape will have no tendency to peel or buckle.

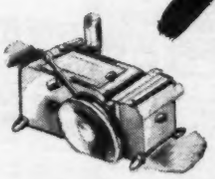
ACTS FAST . . . STAYS PUT

. . . Sealing Solvent W-51 provides a firm set within five seconds, making a permanent bond for Solseal Tape. Tape will not loosen, despite rough or careless handling of packages.

CONFORMS TO JAN-P-128

The Army & Navy specify: "The following materials are recommended:

a) Waterproof adhesives
b) Water-resistant paper tapes, moistening type."



USE YOUR REGULAR EQUIPMENT

No special equipment is required to provide water resistant packaging. With Sealing Solvent W-51 and Solseal Tape in your tape dispenser you are all set to handle waterproof sealing jobs quickly and easily.

EASY TO USE— NO FUSS OR EFFORT

Nothing could be simpler . . . you just put the powder and liquid concentrate into water . . . immediately, with no fuss or effort, you have full strength W-51 ready for use in any standard tape dispenser.

A Product of

The TANGLEFOOT COMPANY

368 STRAIGHT AVENUE, GRAND RAPIDS 4, MICHIGAN

New York City Chicago Kansas City

Makers of

Gummed Tape, Solvents, Insecticides and Flypaper

368

The Tanglefoot Company
Grand Rapids 4, Michigan

Please send me, without obligation, a sample of your new "Dry Form" W-51 Sealing Solvent.

Name and title .....

Firm name .....

Address .....

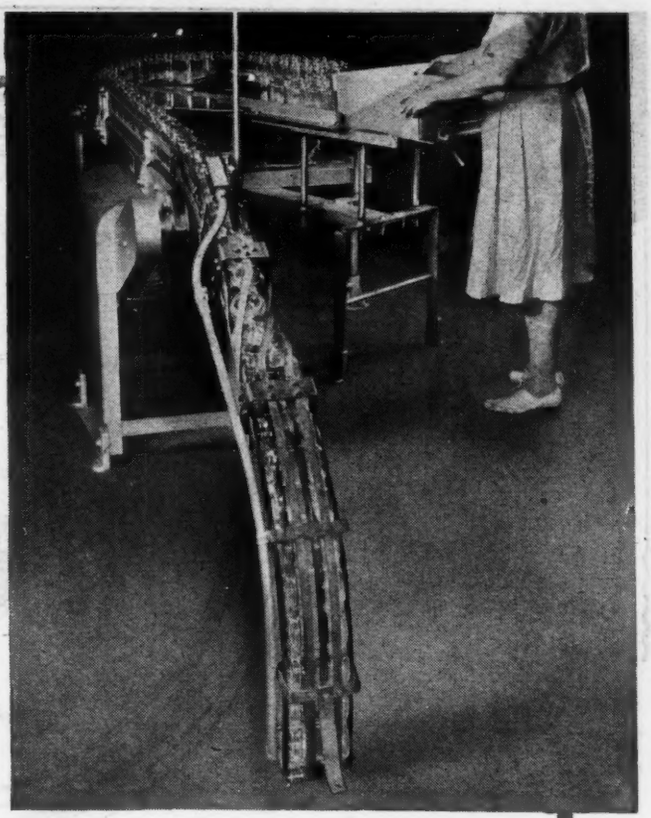
City ..... *State* .....

A LIFT TO DISTRIBUTION

More than TWICE as great a consumer preference nationally for coffee in glass as for any other package is the finding of a 1945 survey. The power of display teamed with the power of consumer brand and package preferences is an unbeatable combination for time-saving selling.

A LIFT TO PRODUCTION

A conventional unscrambler, plus a switch controlling the steady flow of glass down the gravity chute, speeded and simplified this line. Owens-Illinois does not make food packing equipment, but its broad experience frequently proves valuable to users of Duraglas Containers.



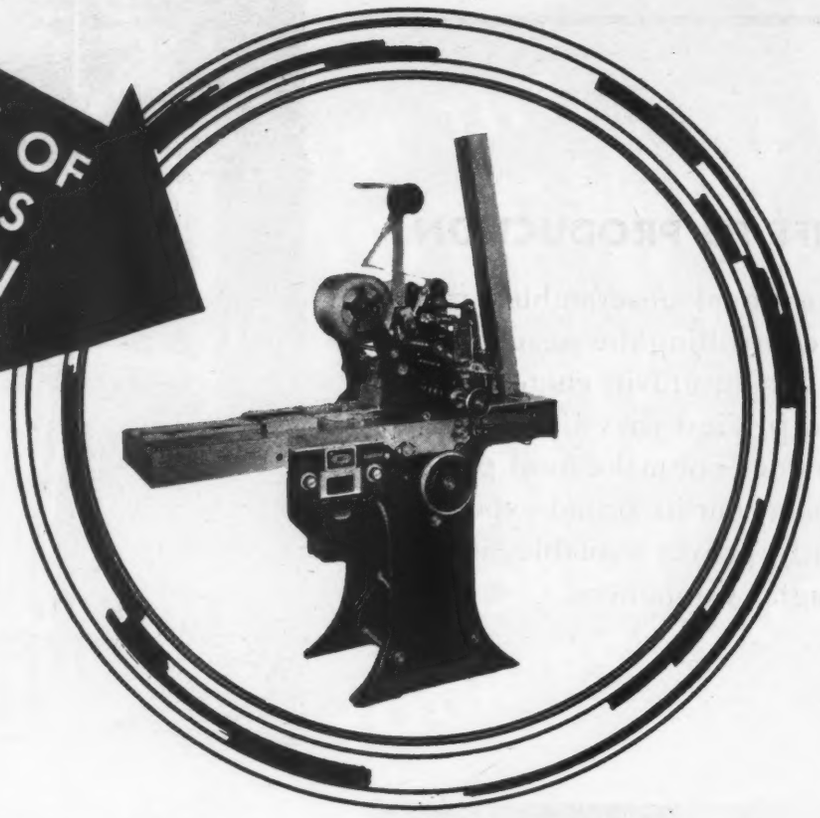
A LIFT TO BUYING IMPULSES

Duraglas Container advertising calls on millions of homes monthly, has built receptiveness for glass products on which you can look forward to capitalizing with *extra* sales and *faster* sales when merchandise is freely available.

OWENS-ILLINOIS GLASS COMPANY
TOLEDO 1, OHIO
Branches in All Principal Cities

Duraglas
TRADE MARK REG. U.S. PAT. OFF.
CONTAINERS
Preserve, Protect and SELL BY SIGHT

PORTRAIT OF A SAVINGS INSTITUTION



SAVING TIME *and* MONEY

—*and Saving Precious Products*

Keeping moisture IN,—or OUT of your product is often paramount to its perfection, and to wrap your product or package in protective cellophane, at LESS cost, and in quicker time you should use

with—or without TEAR-STRIPS—

UP TO 350 per minute!

*Scandia Cello Tite-wrap**

Scandia Cellophane wrapping machines have solved the problem of scores of manufacturers with volume requirements, with a unit fitting smoothly in their production line.

Packaging problems have been solved by Scandia engineers for over 26 years!

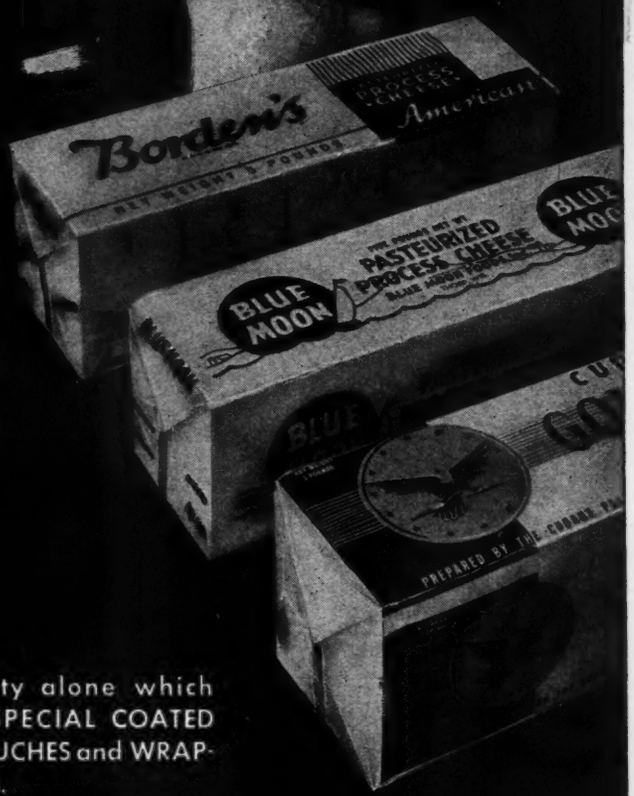
* Manufactured under Bronander Patents

Compare FACTS; and you'll want a Scandia . . .

Scandia MANUFACTURING CO.

NORTH ARLINGTON NEW JERSEY

EYE APPEAL PLUS....



● It's not beauty alone which makes these SPECIAL COATED CELLOPHANE POUCHES and WRAPPERS outstanding.

The purity and flavor of your cheese are protected by the virtually air-tight, transparent, heat-sealed, moisture-proof wrapper.

Available unprinted, or printed in one, two or more colors. *Write for samples.*

GENERAL FELT PRODUCTS

DIVISION OF

STANDARD CAP AND SEAL CORPORATION

68 THIRTY-FIFTH STREET **BROOKLYN 32, N. Y.**

Secure the Closure and Clinch the Sale with "CEL-O-SEAL"

In that moment of indecision when the shopper debates a purchase, CEL-O-SEAL* bands add convincing "reasons why."

They show that the product has been protected against tampering and substitution. They are assurance that a positive seal has safeguarded flavor and freshness. And the extra care given the package bespeaks the attention given throughout the preparation of its contents.

Today, as you plan your package of tomorrow, consider the merchandising and protective advantages of Du Pont "CEL-O-SEAL" cellulose bands. They're available in 'most all colors and in striking color-combinations. They can be *indelibly* printed by an exclusive process, so that they serve as eye-catching second labels. Write today for full information. *Trade Mark

"CEL-O-SEAL" bands and WIND-O-BAND* seals are sold by: E. I. du Pont de Nemours & Co. (Inc.), "Cel-O-Seal" Section, Empire State Bldg., New York City 1 • Armstrong Cork Company, Glass & Closure Division, Lancaster, Pa. • I. F. Schnier Company, 683 Bryant Street, San Francisco 7, Cal.

DU PONT
"CEL-O-SEAL"
"WIND-O-BAND"
SEALS

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

A SMOOTH CASE FOR A SMOOTH SHAVER

A BEETLE* plastic razor housing is handsome as well as practical. It has all the basic requirements you need for sales appeal—customer satisfaction—product efficiency—and economical production.

BEETLE's insulating qualities safeguard the user from shock. The material deadens sound—and its hard surface can stand repeated handling without showing wear or abrasion. All in all, it's a compact, strong, sanitary case—easy and economical to mold—good to use.

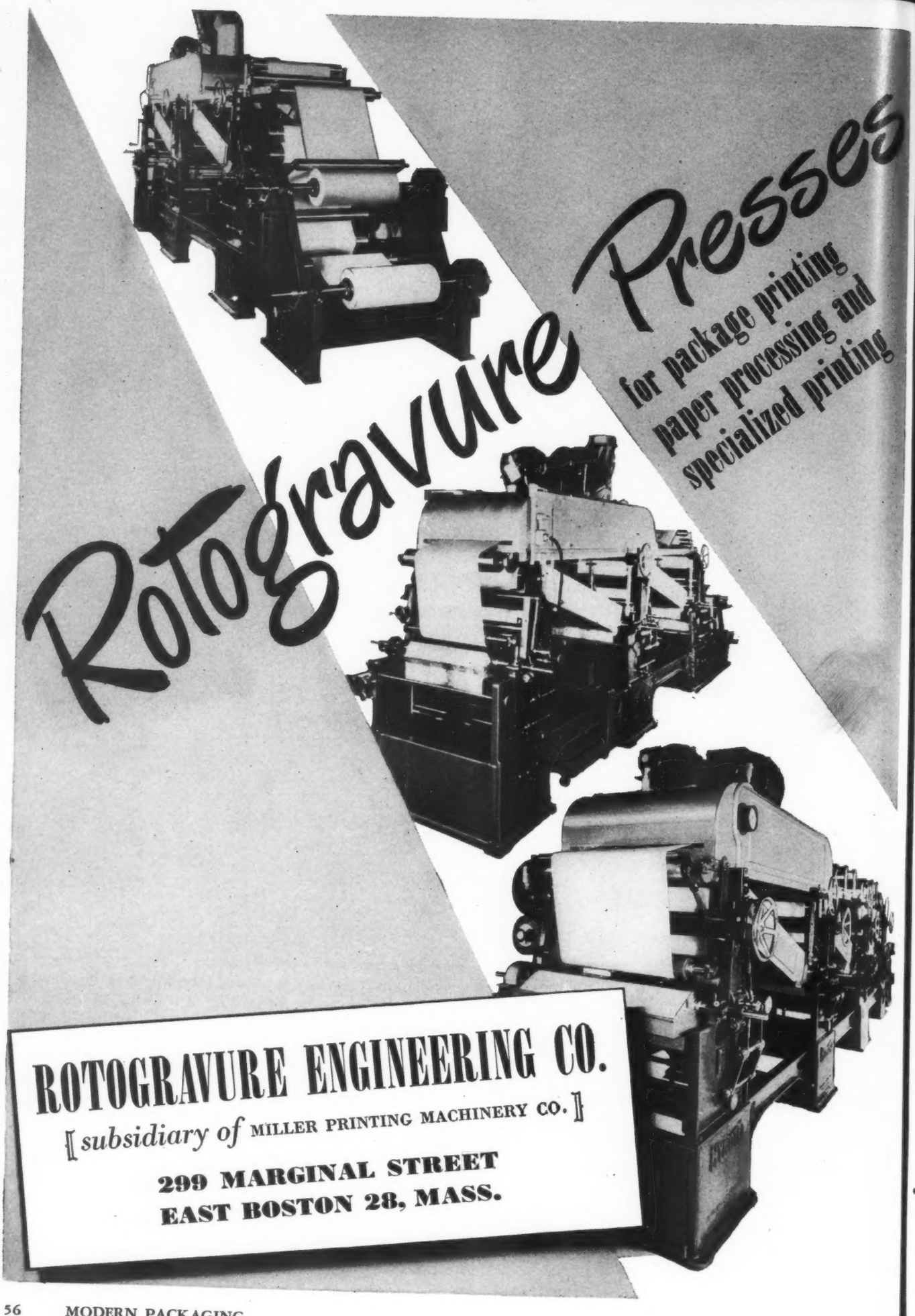
Perhaps you have a product design or packaging problem that can be solved by BEETLE's beauty and functional efficiency. Consult Cyanamid or your plastics molder about this plastic that's *all color in all colors.*

**Reg. U. S. Pat. Off.*

AMERICAN CYANAMID COMPANY
Plastics Division
34B Rockefeller Plaza, New York 20, New York

Cyanamid Plastics

Beetle · Melmac · Melurac · Laminac · Urac



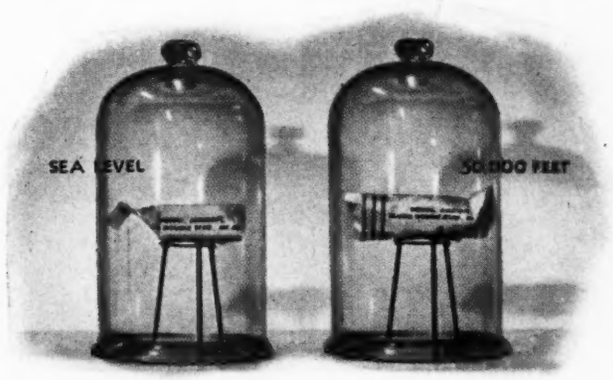
ROTOGRAVURE ENGINEERING CO.

[*subsidiary of* MILLER PRINTING MACHINERY CO.]

299 MARGINAL STREET
EAST BOSTON 28, MASS.

Why Reynolds Foil protects freshness—saves flavor. It's a thin sheet of pure aluminum—that's why Reynolds Foil protects against drying air . . . destructive light . . . flavor-stealing moisture! And it does this triple job better than any other kind of flexible wrapping material. If you want *your* product to reach your customers as *fresh* as the moment it's packed consider foil—consult Reynolds!

Eager beaver: That bright wrapper caught his eye, but what's inside counts too—mighty fine chocolate! Many foods need the light-proof, anti-rancidity protection foil gives. For complete protection combined with maximum eye-appeal, try foil! Consult Reynold's experts.



War Problem: Low pressure at high altitudes caused air-tight signal flare to swell up—"explode." *Solution:* a Reynolds foil-laminated package made over size to fill out (right). *Postwar,* this Reynolds development will be widely used in plane shipments.

Reynolds, for 25 years the resourceful and progressive leader in metal foil packaging, is now perfecting many new, revolutionary protective packages—new ways for Reynold's Foil to keep things fresher. Consider foil—consult Reynolds. Write Reynolds Metals Company, Richmond 19, Virginia.

REYNOLDS FOIL

PURE ALUMINUM

THE FRESH-FLAVOR WRAP

JAY CEE

SILICA GEL

PROTECTS TELETYPE* EQUIPMENT FROM MOISTURE DAMAGE • • •

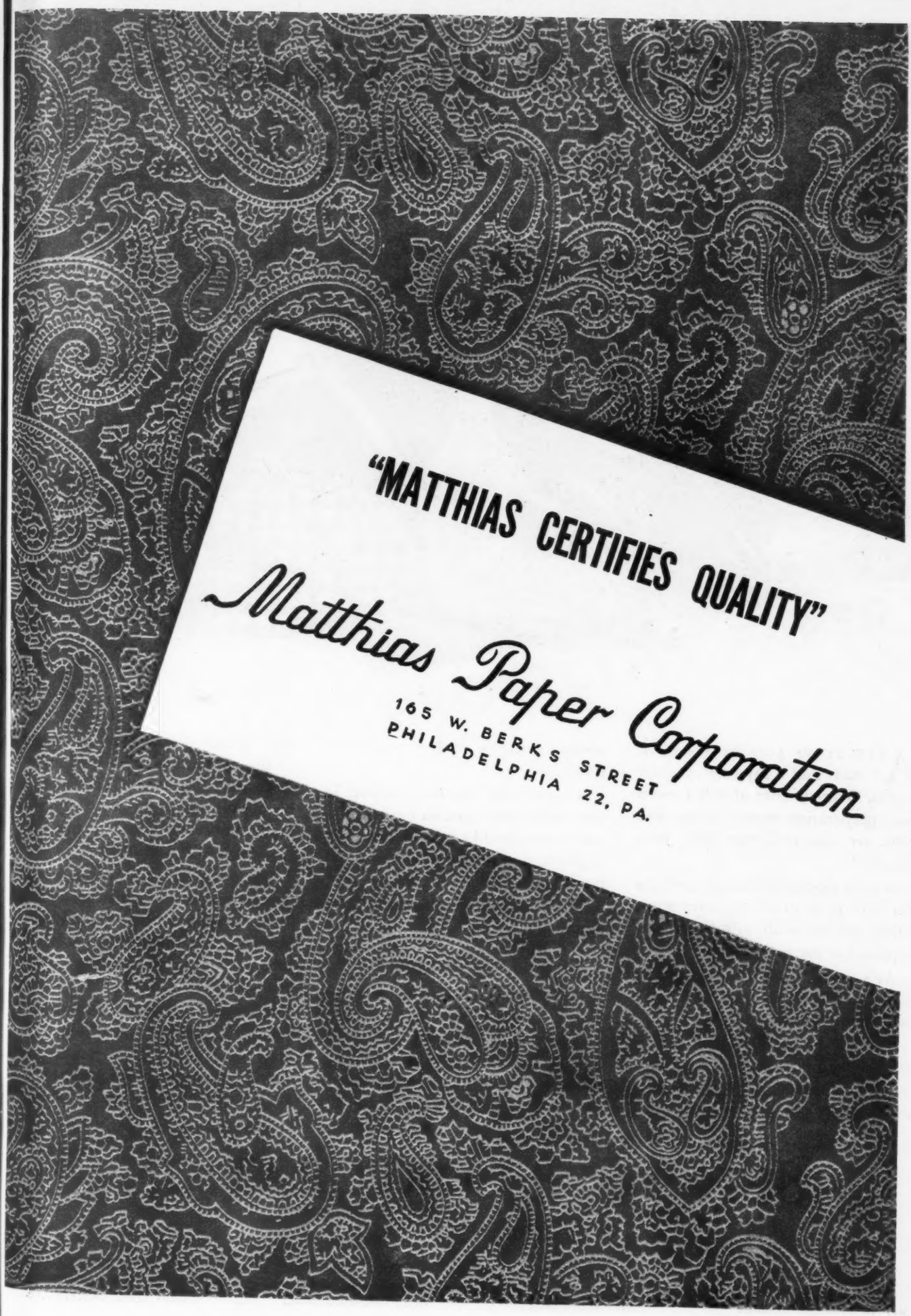
Yes . . . this Teletype printer arrived "perfectly dry" . . . thanks to Jay Cee Silica Gel —which is protecting innumerable over-seas shipments of delicate machines, instruments and weapons from moisture damage.

A few small cotton bags containing this ideal drying agent are enclosed in the box or carton with the equipment. The phenomenal power of Jay Cee Silica Gel to absorb the atmospheric moisture within the container prevents rust or corrosion in transit. Jay Cee Silica Gel is also used in packages of foods, fabrics, chemicals, and other products. Moreover, it has wide application in the air conditioning, refrigeration, and chemical industries. Jay Cee Silica Gel is clear white; passes a rigid section test, meets exacting Government specifications; is strictly a quality product.

JOBBERS WANTED—A few excellent Jay Cee Silica Gel sales territories are still open to jobbers. Write for details.

* Registered trade-mark

JOLIET CHEMICALS, LTD.
INDUSTRY AVENUE
JOLIET, ILLINOIS


"MATTHIAS CERTIFIES QUALITY"
Matthias Paper Corporation
165 W. BERKS STREET
PHILADELPHIA 22, PA.

Case of the Vitalis that wasn't

A FEW YEARS AGO the makers of Vitalis had a mystery on their hands. Over-all sales of this famous hair preparation were greater than ever, *yet sales to barbers were falling off.*

A little sleuthing brought to light the fact that Vitalis bottles were being refilled with substitutes and supplied as the real thing.

As a result, sales were being lost and Vitalis itself was getting a black eye among barbers' customers.

The Vitalis people called on Sun Tube to help solve this ticklish problem. We developed a special one-shot, collapsible tube which, once opened, could be neither re-used nor refilled.

Barbers liked the tube because it was handy and gave an exact measure. Customers liked the idea because it guaranteed the genuineness of the product.

The result? Barber sales more than doubled!

How all this Concerns You

Now, we may not be able to solve your present or postwar packaging problem as dramatically as that of Vitalis. But this gives you an idea of the resourcefulness our engineers and designers can bring to bear.

You already know the advantages of the collapsible tube. Its convenience and compactness. The fact that it's germ-proof, light-proof, and virtually unbreakable. That the contents won't dry out in use.

Just as important, however, are the new developments which make Sun Tubes ideal containers for products never before thought suitable for tube packaging. Maybe yours is one of them.

Why not find out? For information or advice that may help solve your particular problem, just call the Sun Tube representative nearest you. He'll be glad to help you.

SUN TUBE CORPORATION

Hillside, New Jersey

CHICAGO 1, ILL.
James L. Coffield, Jr.
360 No Michigan Avenue

ST. LOUIS 1, MO.
M. P. Yates
Arcade Building

ST. PAUL 1, MINN.
Alexander Seymour
615 Pioneer Building

LOS ANGELES 27, CALIF.
R. G. F. Byington
1260 North Western Ave.

SOMETHING TO SHOUT ABOUT!

Sherman V-28

THE A+ PROTECTIVE PAPER

Ask any schoolboy how an A+ paper rates—he will tell you it's tops! Ask any user how Sherman V-28 rates—he will tell you that it, too, is tops, with these plus values:

☆ Surpasses specifications for Grade A papers with the high strength required for the Type II group. Tests over 1800 seconds on turpentine penetration—over twice the government minimum.

☆ A special, inhibitor treatment makes V-28 more than non-corrosive—it's anti-corrosive!

☆ A combination of a strong neutral kraft (red), with a tough, plastic film, provides extra protection against puncturing and tearing, while the deeply embossed surface makes Sherman V-28 more resilient, more pliable and easier to use.

Something, indeed, to shout about—for the A+ qualities of Sherman V-28 give safer, longer lasting protection!

SAFER PROTECTIVE PACKAGING FOR POSTWAR USE

Sherman protective products include many types, for a great range of packaging needs:

Cushioning products for the safer packaging of every breakable product.

Corroflex—"Cartons in Rolls"—the flexible-cushion wrap for inner or outer packaging.

Cushion packaging products for foods.

Baking Pan-Liners—money-saving dual-purpose pan-liners and packaging trays.

Grade A and Grade C papers — greaseproof, non-corrosive protection for metal products.

Let us send you free trial samples to meet your needs, together with the valuable photographic manual on Speed-Packing. It's FREE—check the coupon and mail today!

Sherman

PAPER PRODUCTS CORPORATION

Newton Upper Falls 64, Mass.

Branches in New York, Chicago, Los Angeles

Right! We're interested in safer, protective packaging. Send the following (no cost or obligation):

☐ Sherman V-28, and "Speed Packing" Manual
☐ Other Protective Products

NAME.....

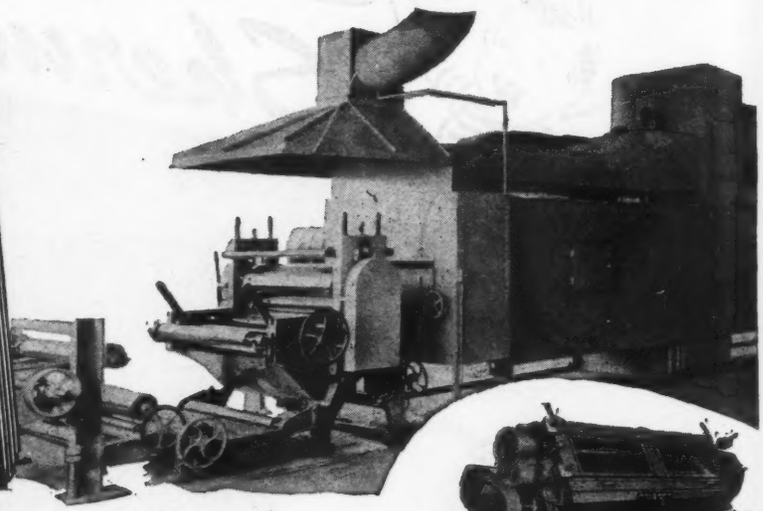
COMPANY.....

STREET.....

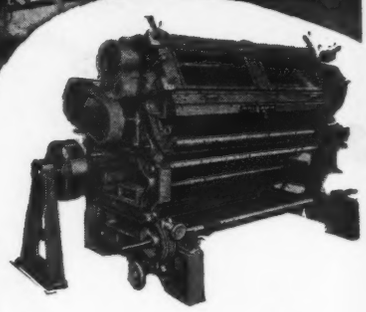
CITY & STATE.....

Plastics *Treated* Papers
provide remarkable new materials

Reduced reproduction of article published in May issue of Plastics magazine



Waldron Treater System

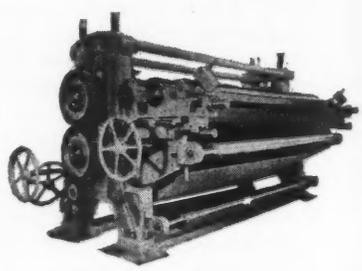


Waldron Reverse Roll Coater for applying plastics solution

and the machines that make them possible are built by

WALDRON

Waldron Treater Head equipped with reverse roll coating mechanism.



The Waldron Treater System illustrated above is a complete machine line consisting of Waldron mechanical treating apparatus in tandem with Ross Engineering air processing apparatus.

They're the talk of the industry—Paper, Plastics and the WALDRON machines that wed them! Paper not only takes on new appealing beauty but achieves new desirable properties of strength, durability and resistance to heat and moisture. Whatever the specific treatment required, WALDRON machines are available to complete the job from unroll, thru treating and curing to the final rewind. Our Catalog No. 112 will point the way to new horizons for paper makers. Consult us on the possibilities for your product.

JOHN WALDRON CORP.

Main Office & Works – NEW BRUNSWICK, NEW JERSEY

CHICAGO - 6
201 N. WELLS ST.

NEW YORK - 17
350 MADISON AVE.

BOSTON - 9
79 MILK ST.

BUILDERS OF QUALITY MACHINES SINCE 1827

A Boast

There's nothing finer than a Linden Box

We have created and manufactured packages for many of America's leading products —

HAND-MADE BOXES
AUTOMATIC BOXES

SEMI-AUTOMATIC BOXES
LEATHER KITS

Linden Boxcraft Co.

MANUFACTURERS AND CREATORS OF FINE PAPER BOXES

400 LIBERTY AVE. • LINDEN BLDG. • BROOKLYN 7, N. Y.

Send for booklet H

Read the Story of Patapar

Patapar* Vegetable Parchment has qualities you may not know about — wet-strength so great it can be boiled without harm — and power to resist penetration of grease, fats, oils. The booklet gives the complete story. It tells about different types of Patapar designed to meet all sorts of problems. Some types of Patapar are airtight. Other types are made for products which must have wrappers that allow them to breathe. There are types of varying degrees of wet-strength, grease-proofness, opaqueness. In all there are 179 different types of Patapar.

Get to know this unique paper. If you are already using it as a wrapper, you may discover how Patapar can be helpful to you in other ways. Write on your business letterhead for booklet H.

*Reg. U. S. Pat. Off.

A few of Patapar's many uses

Wrappers for butter, meats, fish, cheese, shortening, poultry, ice cream, vegetables, dried fruits. Carton and box liners. Bulk packaging units. Milk can gaskets. Milk bottle hoods. Packaging coffee and tea.

Paterson Parchment Paper Company • Bristol, Pennsylvania

Headquarters for Vegetable Parchment Since 1885

WEST COAST PLANT: 340 BRYANT STREET, SAN FRANCISCO 7, CALIFORNIA

BRANCH OFFICES: 120 BROADWAY, NEW YORK 5, N. Y. • 111 WEST WASHINGTON ST., CHICAGO 2, ILL.

The old horse won't stand the new load

Plan now to replace fatigued and obsolescent packaging machinery . . . plan with ROSS. ROSS packaging machinery, revolutionized through long years experience, will successfully meet your coming demands. With speedy, versatile adjustability through precision dial controls — no oiling, all moving parts self-oiled — ROSS automatic and semi-automatic machines have Master Speedrangers giving speeds from 40 to 120 a minute or greater. Standardization of high precision parts, made to close tolerances is an exclusive feature of every ROSS machine. Look to ROSS for assistance in your packaging problems. Write for complete information.

PAT. APPLIED FOR

A. H. ROSS Co. LUDLOW • KENTUCKY

PACKAGING MACHINERY

In Peace as in War

symbol of

Superiority ★★★ Service

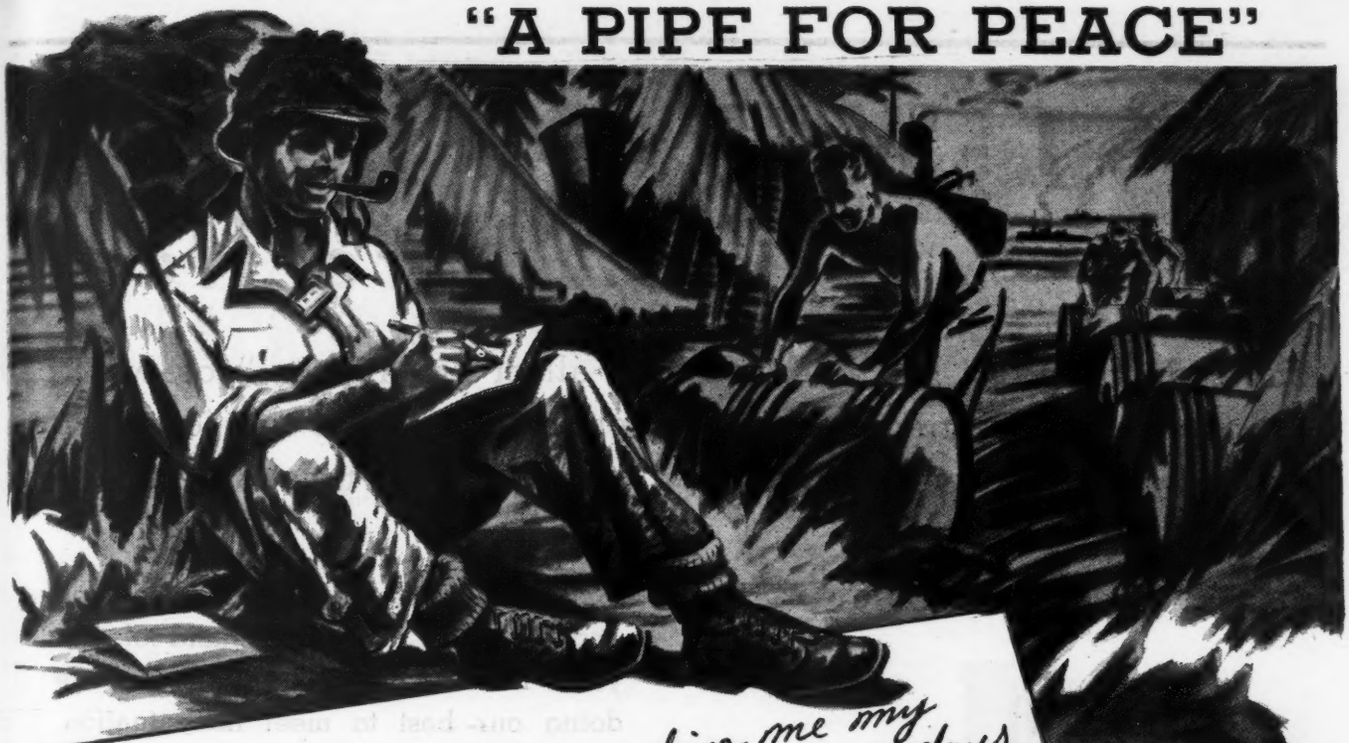
PLASTIC FILM CORPORATION

Developers and Manufacturers of Films for all Uses

475 FIFTH AVENUE
NEW YORK 17, N. Y.

PLAINFIELD
CONNECTICUT

"A PIPE FOR PEACE"



—" and thanks for sending me my favorite pipe. It arrived in just 10 days via air mail and that handy box— The new stem works swell and smoking it makes a moment of peace for thoughts of home, in spite of coconut bugs and [illegible] mud—even a sergeant is a so[illegible] to smoke—

Bob H[illegible]

at some [illegible]

That "handy box" was a Mason MailM[illegible]ter and it's a favorite container for brand [illegible] pipes, too. Pipes as well as hundreds of othe[illegible] peace time products will be carried swiftly, economically and safely in sturdy, convenient sized Mason Mailmasters.

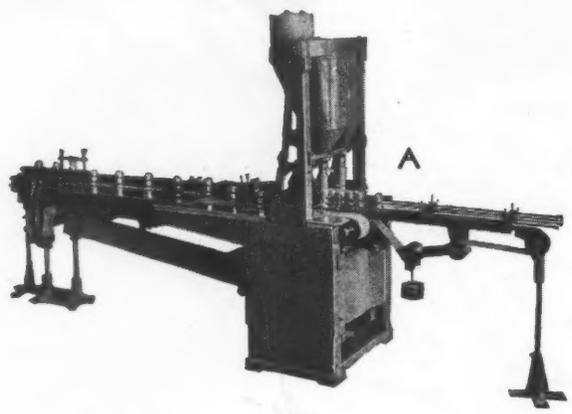
The MASON BOX COMPANY

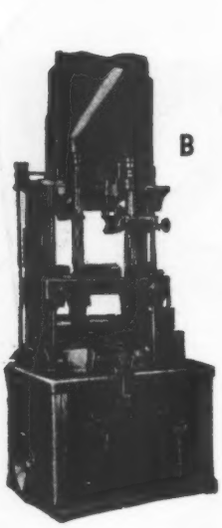
ATTLEBORO FALLS, MASS.—175 5TH AVE., NEW YORK

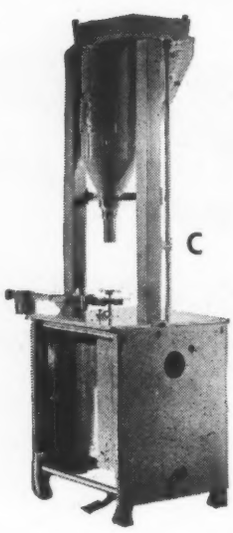
POST-WAR DAYS

....Are Here!

The sudden end of hostilities plunged all of us into the "post-war" period over night. During the war our entire output was subject to priorities. Raw materials now are available, but it takes time to manufacture machines.







With neither machines nor parts on hand and with the pent-up demand of war years flooding us with orders, we are doing our best to meet the situation. Our production facilities have been increased . . . we have taken on more manpower . . . and trust our customers will understand the unavoidable delay in filling their orders.

Of course, S & S machines are worth waiting for. We have the right machine for the right job, which accounts for the fact that a goodly percentage of America's famous products are packaged on S & S filling, packaging and wrapping machines—among which are . . .

A—S & S Two Station Filling Machine.

B—S & S Transwrap Machine. Forms—Fills—Seals. Uses cellophane or other heat sealing films.

C—S & S Universal Filler. For powders, pastes or granular material.

STOKES & SMITH Co

FRANKFORD, PHILADELPHIA 24, U. S. A.

FILLING • PACKING • WRAPPING MACHINES

THE FLAGS ARE FLYING FOR KUPFER'S NEW PACKAGING PAPERS

NEW PATTERNS—NEW DESIGNS—
NEW COLORINGS—NEW EMBOSSING
AND PRINTING EFFECTS

Kupfer's box papers, trade-marked papers, gift papers, greeting card and specialty numbers have long been famous for originality in design and color. But wait until you see the new papers which Kupfer is making for you right now! To talk about them would be a waste of words and time. We promise you that you will like them better, even, than the old line. Swatch books and samples will be ready shortly. Look for tipons in MODERN PACKAGING'S future issues.

KUPFER BROS. CO.

Manufacturers of Surface Coated Papers

4 ASTOR PLACE, NEW YORK 3, N. Y.

Est. 1845

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KUPFER BROS. PAPER CO.
145 WEST HUBBARD STREET
CHICAGO 10, ILLINOIS

Southwest Representatives:
MODERN PACKAGINGS
IRWIN-KEASLER BLDG., DALLAS 1, TEXAS

IT'S WHAT YOU DO WITH CELLULOSE FIBRE THAT COUNTS

Pages of *Home Sweet Home*

He is a veteran on his way—home.

The book he reads is a breath of America. Every page, every picture is home sweet home to him. And when he does get back, books will be of great help in refitting him for a constructive new life.

This is one reason why books are so vital.

Yes, the war has given us new, heightened realization of how vitally important books can be in the civilian economy—in education, in advancing ideas, in pointing up specialized instruction, and to turn otherwise empty hours into full, fruitful ones.

For the production of postwar books, Oxford will have quality book papers that fit the purpose admirably. Papers that invite reading and make it easy on the eyes. Papers that print sharp, clear type and catch all the sparkle of good illustrations. Papers that bring out all the beauty of color. Papers just right for the book itself, as well as for appealing colorful book jackets.

As always, you can call on Oxford's seasoned counsel. Behind this counsel is continuous research in getting the best out of cellulose fibre—plus the experience gained in making over a thousand miles of quality paper daily for many years.

☆ ☆ ☆ ☆ ☆ ☆

Included in Oxford's line of quality printing and label papers are: Enamel-coated—*Polar Superfine, Mainefold, White Seal, Rumford Enamel and Rumford Litho C1S;* Uncoated—*Engravatone, Carfax, Aquaset Offset, Duplex Label and Oxford Super, E. F., and Antique.*

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WESTERN SALES OFFICE
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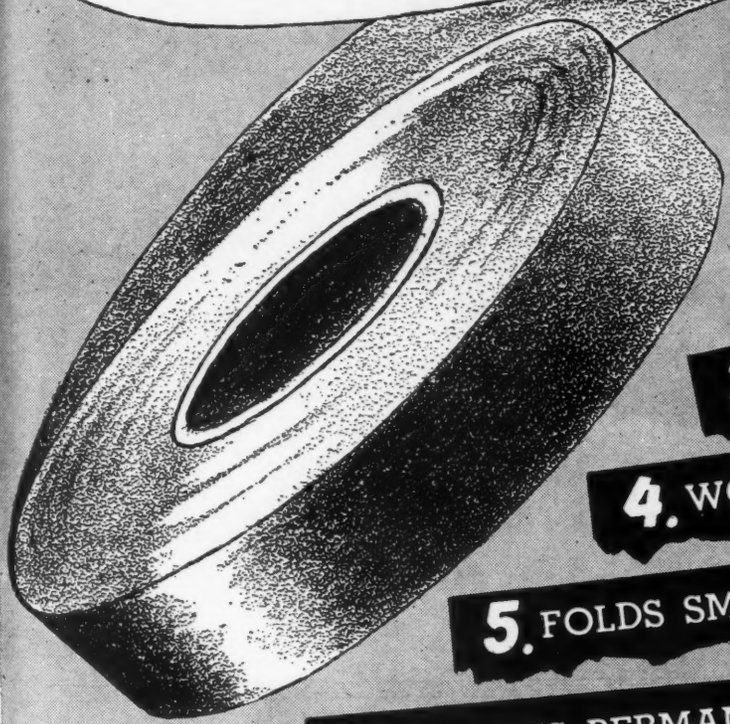
HERE'S YOUR CHANCE TO TEST VIPACO '6-ACTION' GUMMED TAPE



1. STICKS FASTER!
2. GRIPS STRONGER!
3. SEALS CLEANER!
4. WON'T SIDE SLIP!
5. FOLDS SMOOTHER!
6. ADHERES PERMANENTLY!

Here's the amazing, improved gummed sealing tape that means better, more economical packing and shipping for you. VIPACO "6-Action" gummed tape is stronger, yet less bulky . . . a specially prepared glue gives even overall coverage and won't side-slip . . . unusual flexibility allows for gripping around corners . . . it sticks instantly without added pressure.

VIPACO gummed sealing tape is the answer to many a wrapping problem! It's available in all sizes. *Test it for yourself*—write now for a SAMPLE—no obligation. Prices on request.

DISTRIBUTED BY

The VIKING

PAPER COMPANY, INC.

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NEW YORK 12, NEW YORK

MAIL THIS COUPON FOR SAMPLE

VIKING PAPER COMPANY, INC. A
542-544 West Broadway, New York 12

SEND ME a Sample of your improved VIPACO "6-Action" Gummed Sealing Tape—I'd like to test it for myself. No obligation.

Name_____

Address_____

City_____ State_____

Is your container dated "Button-Shoe" era?

ARE YOU selling an improved product in a "button-shoe" era package?

This is something to think about.

Your product is better today than it was years ago. For, like most progressive manufacturers, you've improved it over the years. And now that the war is over you may be considering further improvements. BUT—

Will your container do the job?

In the competitive days ahead, will your package match your product improvements? Is it economical and efficient? Is it interesting enough to make people point to it and say, "I want *that* one"?

This is the time to plan your postwar packaging. Why not get the latest packaging information *now?*

We're here to help you

We believe we have the answer to your packaging problems. We're ready to devise new eye-appealing containers that will go to bat for you economically and efficiently.

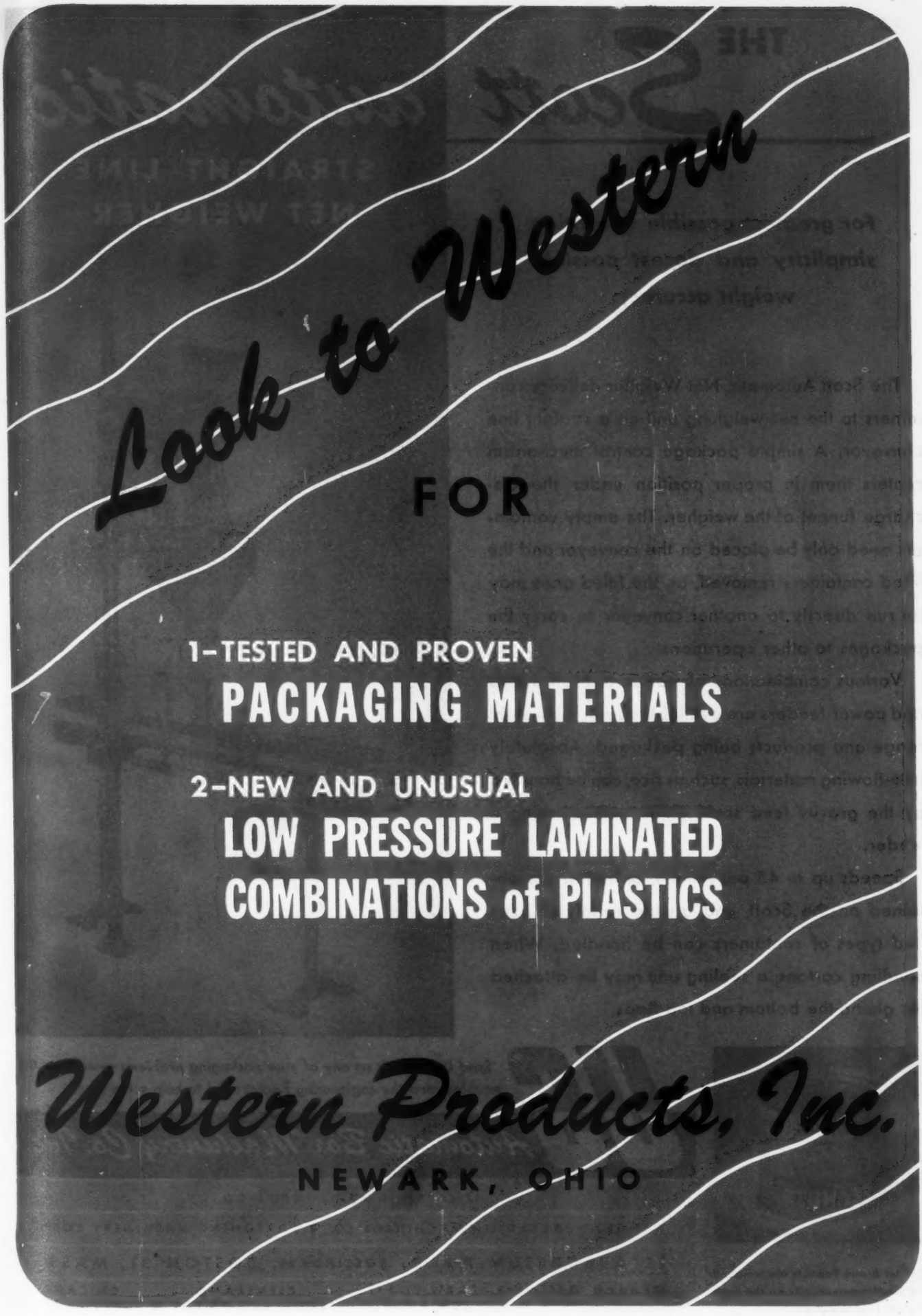
Our past experience will aid you with *your* packaging problems.

We can help you, as we've helped others. Just ask our representative or write us direct.

AMERICAN CAN COMPANY

230 PARK AVENUE CANCO *NEW YORK 17, N. Y.*

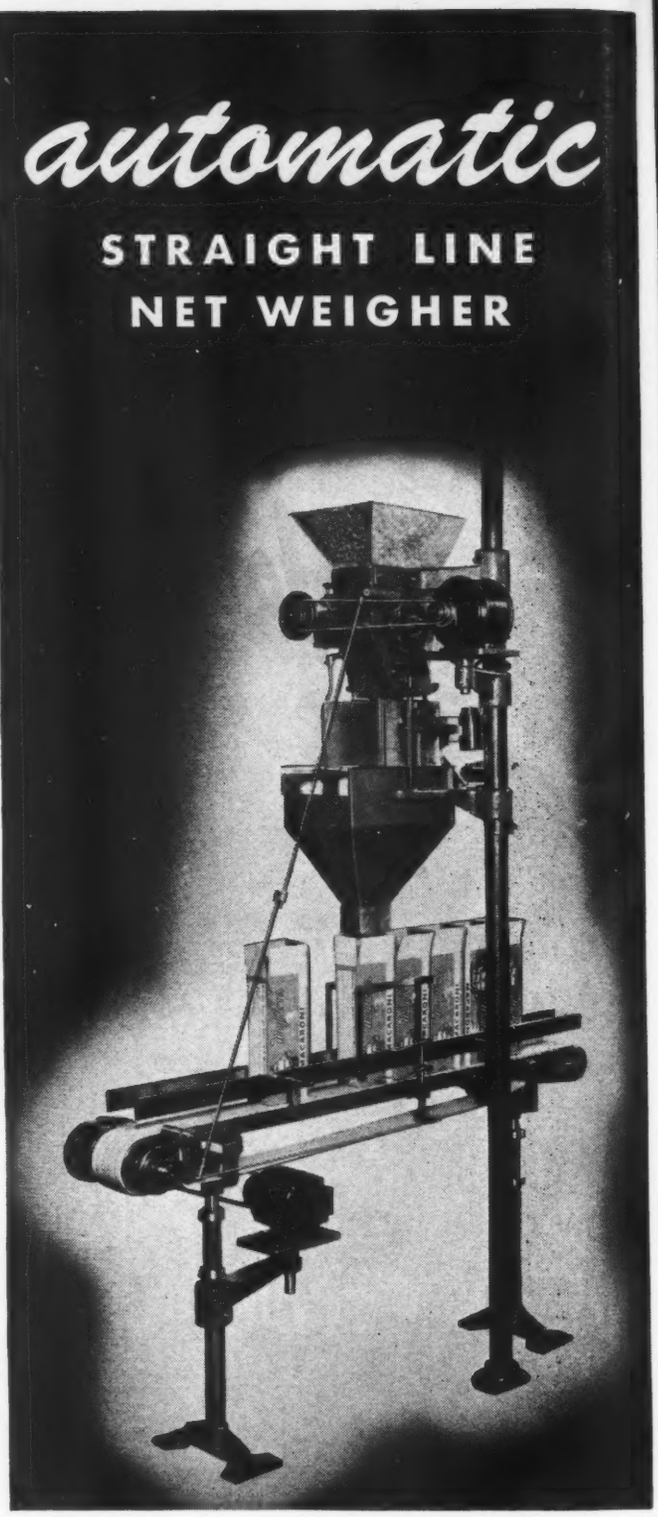
World's Largest Manufacturers of Fibre and Metal Containers


Look to Western
FOR
1-TESTED AND PROVEN
PACKAGING MATERIALS
2-NEW AND UNUSUAL
LOW PRESSURE LAMINATED
COMBINATIONS of PLASTICS
Western Products, Inc.
NEWARK, OHIO

THE *Scott* automatic

STRAIGHT LINE NET WEIGHER

For greatest possible operating simplicity and closest possible weight accuracy



The Scott Automatic Net Weigher delivers containers to the net weighing unit on a straight line conveyor. A simple package control mechanism centers them in proper position under the discharge funnel of the weigher. The empty containers need only be placed on the conveyor and the filled containers removed, or, the filled ones may be run directly to another conveyor to carry the packages to other operations.

Various combinations of standard Scott scales and power feeders are available to suit the weight range and products being packaged. Absolutely free-flowing materials, such as rice, can be handled by the gravity feed scale alone, without using a feeder.

Speeds up to 45 per minute, or better, are obtained on the Scott, and a wide variety of sizes and types of containers can be handled. When handling cartons, a sealing unit may be attached for gluing the bottom and top flaps.

Squirrel Brand Peanuts are weighed and filled automatically on the Scott Straight Line Weigher.

Send U.S. details on any of your packaging problems—we have the machines and the engineering background to help solve them.

US *Automatic Box Machinery Co. Inc.*

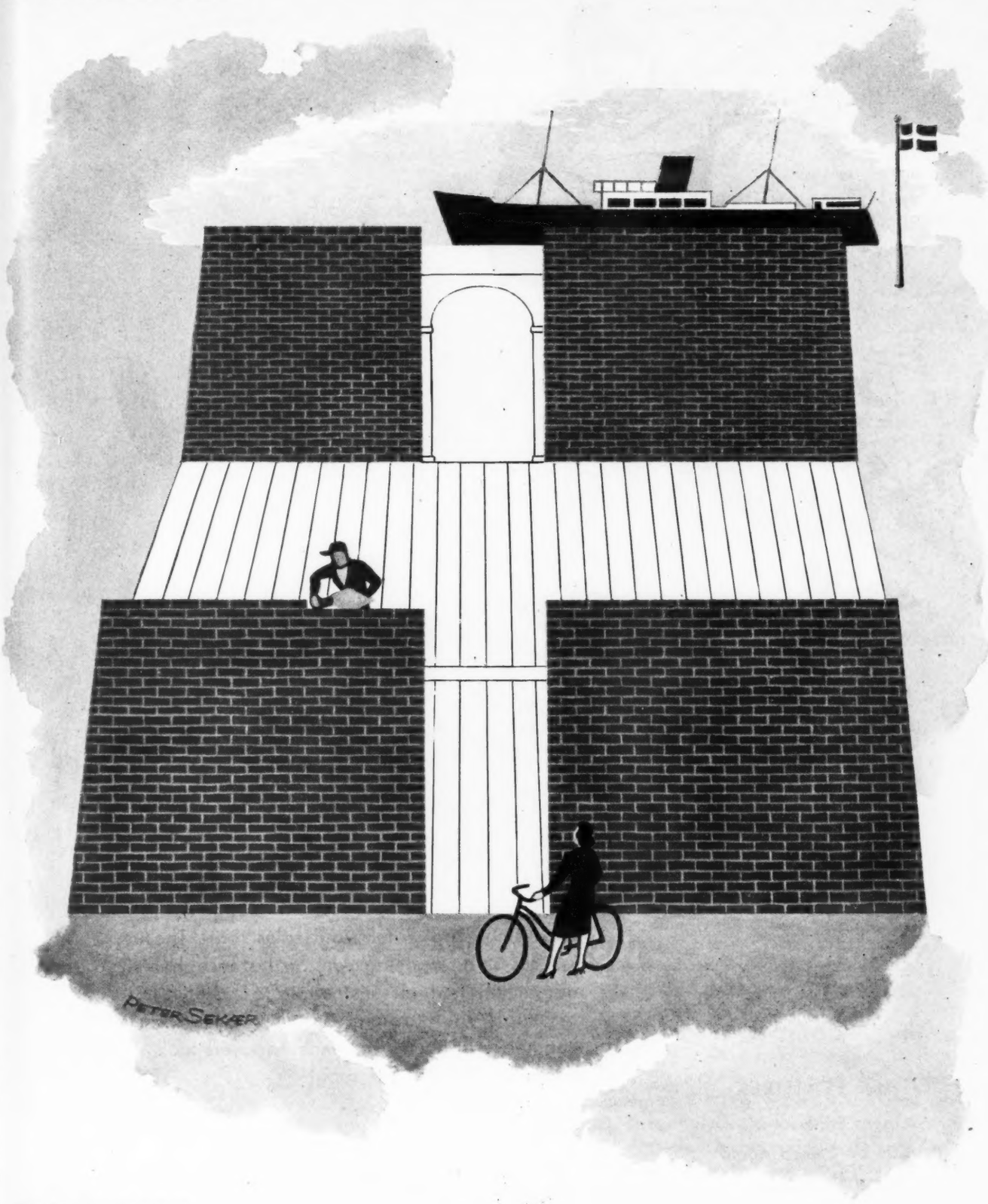
Owning and Operating

NATIONAL PACKAGING MACHINERY CO. • CARTONING MACHINERY CORP.

18 ARBORETUM ROAD, ROSLINDALE, BOSTON 31, MASS.

Branch Offices: NEW YORK CLEVELAND CHICAGO
LOS ANGELES (KRUGH EQUIPMENT & SUPPLY CO.)

Artist: Peter Sekaer, native of Denmark



FREED FLAG. Denmark rebuilds—aided by shipments in paperboard. Meanwhile, our laboratory experts continue their constant research to make available for peacetime needs the new and advanced packaging techniques developed to meet the demands of war.

CONTAINER CORPORATION OF AMERICA

CHICAGO AND 22 OTHER CITIES

SAVE WASTE PAPER

Step Up Your Sales Score

WITH SEFTON'S POST-WAR "PROFIT PACKAGING"

Team your post-war product with Sefton's "Profit Packaging" and watch your sales soar! The ingenious string-opening can, for instance, has so many utility features* it's certain to score! It factory-seals your product and is tamper-proof. Another reason why wise manufacturers look to Sefton for "Profit Packaging!"

***OTHER FEATURES**

Opens Easily
Can be Closed Again
Full opening to facilitate packing

SEFTON

FIBRE CAN COMPANY

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KEEP IT *Dry* PACK IT *Right!*

WAR PROVED

WOLFE Liners make any type of shipping case or carton WATERPROOF—thus protecting your product from moisture hazards during shipment or storage!

Today—thousands of WOLFE-lined cases carry war cargoes safely overseas. Thoroughly proved in war shipping—WOLFE Liners offer outstanding advantages for civilian products now and in the future!

Economical... easy to use... these liners are of the sturdiest materials... using tough papers scientifically treated with the best waterproofing available. Rigid tests assure stability. Available in 3 standard styles for inside or outside use... flat style, automatic opening style, top sheet style... all sizes. Write today concerning WOLFE Waterproof Liners, special types of waterproof covers and liners, or for information on other special packing problems. Representatives in all principal cities. Robert F. Wolfe Company, Fremont, Ohio.

WOLFE *Waterproof* LINERS

PARTS FABRICATED BY ROGERS

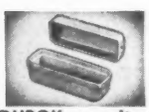
KAYPAR fuel pump protector

KAYGREY radio dust cover

KAYGREY magneto insulator

KAYGREY formed insert

DURO motor slot cell



DUROK capacitor can liner

BAYRU packing list protector

THEY'RE ALL USING BM-9725* –ANOTHER ROGERS-BORD

INDUSTRY hands this ROGERS-BORD to its customers in ever-increasing quantities. Made exclusively for Bakelite Corporation and identified as BAKELITE molding plastic BM-9725, it is a high-strength thermo-setting plastic used for a multitude of products requiring extra ruggedness.

While ROGERS does no plastic molding, its complete Fabricating Division helps molders by producing BM-9725 blanks of correct weight and thickness and proper shape for easier molding. ROGERS has thus simplified production of many kinds of high-strength plastic articles.

And, as shown in the panel above, other ROGERS-BORDS — plastic and non-plastic — can be formed, drawn, punched and shaped by ROGERS into a wide range of components.

To learn more, check and mail:

- ☐ Send me the ROGERS EXHIBIT BOX, containing fabricated parts and samples of Rogers-Bord.
- ☐ Have a Rogers representative bring samples and fabricated parts.
- ☐ We are enclosing blueprint for suggestions and quotation.

COMPANY .....

ADDRESS .....

NAME .....

ROGERS CORPORATION

Formerly

The Rogers Paper Manufacturing Co.

115 Mill St. Manchester, Conn.

***BAKELITE BM-9725**

PRODUCTION STEPS

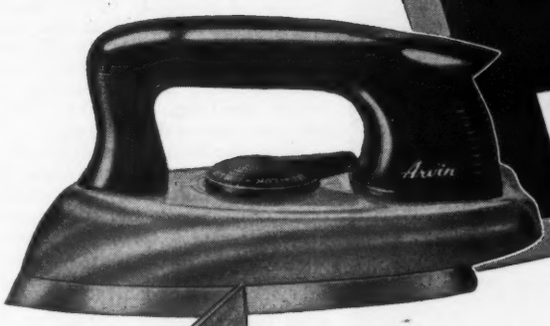
MANUFACTURING	FABRICATING BY ROGERS	MOLDING
Phenolic resin and cellulose fiber sheets.	Sheets blanked to molders' requirements.	Knife handle molded from blanks.

CREATORS AND FABRICATORS

ROGERS

FIBROUS AND PLASTIC MATERIALS

ARVIN
Automatic
ELECTRIC IRON



In a "Package" Tailored by

INLAND

● The new Arvin Automatic Electric Iron, the result of careful planning and skilled engineering, will be delivered safely in an Inland Container. *Your* product deserves an Inland "tailored" package.

INLAND CONTAINER CORPORATION

DESIGNED FOR
NOBLITT-SPARKS INDUSTRIES, INC.

INLAND
CORRUGATED FIBRE BOXES

INDIANAPOLIS, IND. • MIDDLETOWN, OHIO • EVANSVILLE, IND. • MILWAUKEE, WIS. • DETROIT, MICH.

"Metal-basting"... eliminating cumbersome, expensive jigs... with a few little staples to hold assemblies in position while welding... also saved 45% of *time* required to weld automobile gas tanks.

The tiny Bostitch staple... machine-applied... preformed or from a coil of wire ... speeds many fastening operations... in manufacturing, in paper work, in packing and shipping. A pottery manufacturer saved 50% in carton-sealing... a shoe manufacturer attached felt to wood heels 10 times faster... a softball manufacturer saved 70% in an important operation.

Investigate Bostitching — a growing production method—for fastening metal, plastics, wood, cloth, paper... in any combination... very often much faster, easier better than gluing, nailing, taping, etc.

Mail coupon for Folder B-154 which briefly covers representative models and may suggest an application that you can use to speed your fastening or lower your costs.

BOSTITCHING
offers you the most in stapling

Experience... EST. 1896 Nearly 50 years specializing in fastening.

Engineering... 18 research engineers.

Selection..... Nearly 800 models.

Service... Over 200 local representatives, all stapling specialists (300 prewar, 400 postwar).

Bostitch Staples in most sizes are now available

BOSTITCH
fastens it better AND FASTER *with wire*
ALL TYPES OF STAPLES APPLIED BY MACHINES
ALL TYPES OF MACHINES FOR APPLYING STAPLES

BOSTITCH (Boston Wire Stitcher Co.), 55 Duane Street, East Greenwich, R. I. (Bostitch-Canada, Ltd., Montreal).

Please send Folder B-154 on Bostitch time-and-money-saving applications to:

Name.....

Company.....

Address.....

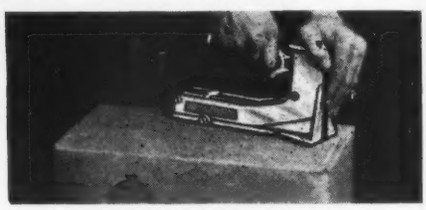
Commercial Packaging Finds New Values in Wartime Methods

● What happened on August 14 made it necessary for all of us who are interested in packaging to readjust our war-time viewpoints toward method and design.

During the war, the planning of many package designers and shippers had been influenced primarily by the urgency of the military supply problem and also by such considerations as scarcity of materials and the necessity of protecting against low temperatures, high humidity, immersion, rough handling, and other conditions not normal in peacetime shipping.

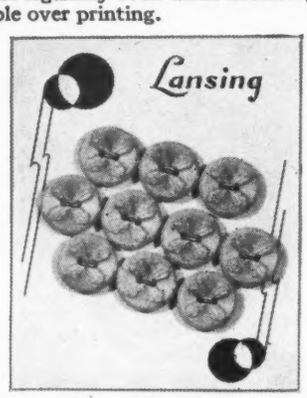
Now the former essentials in packaging have returned to their pre-war prominence in the package designers' thinking: low cost, sales appeal, user-convenience.

In war, Bostitching offered certain values which contributed to the achievement of wartime objectives; in peace, some of the same values still apply and others resume their importance in helping to provide the desired low cost, sales appeal and user-convenience. For example:



Speeds Packing Bostitch Autoclench seals tops of corrugated shipping containers *after* they are filled. No sealing blade to insert. Speed cuts costs.

Improves Appearance Bostitch staples make neat, unobtrusive seal; do not affect legibility even when necessary to staple over printing.



Increases Accessibility Bostitch staples clinched through button eyes permit removing single button without loosening all (as when sewn on with a single thread).

On any problems concerning package sealing, bag sealing, carding, tagging, display or packing for shipment, consider Bostitching. Recommendations made without obligation—send sample or description of problems to Bostitch East Greenwich, R. I.

"I'VE ALWAYS WANTED AN ORIGINAL DUNCAN PHYFE"

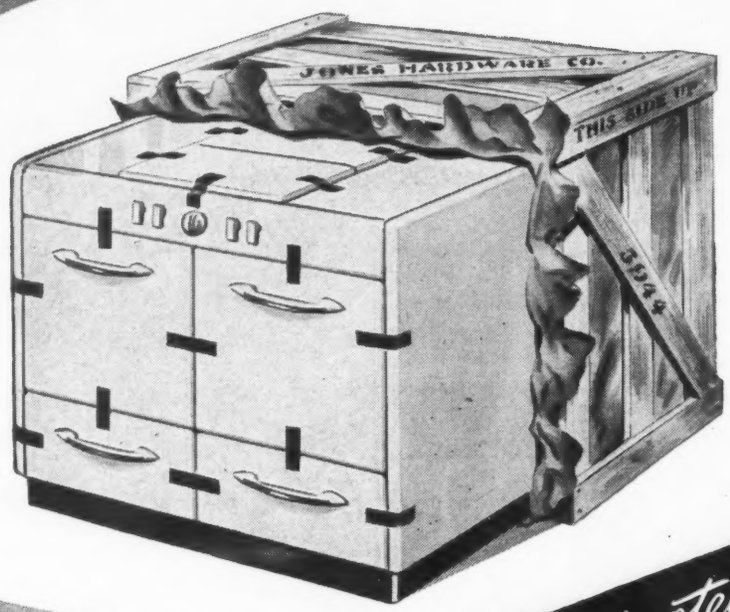
Back in the early part of the 19th century lumbermen away off in Honduras, selected their finest Mahogany trees and marked them "Phyfe Logs!" These trees were reserved for one of America's foremost furniture builders . . . Duncan Phyfe. The delicately proportioned designs and dependable quality that Duncan Phyfe built into each piece of furniture, won him widespread fame. He has the unique distinction of being the only American for whom a furniture period has been named.

Carr-Lowrey has become one of the foremost names in the field of fine American glass containers. More than 52 years of devotion to the highest standards in glass manufacture has made the name Carr-Lowrey respected and trusted by quality-minded buyers.

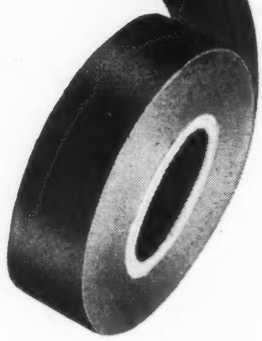
CARR-LOWREY GLASS CO.

Factory and Main Office: BALTIMORE, MD. • *New York Office:* 500 Fifth Avenue • *Chicago Office:* 1502 Merchandise Mart

MYSTIK ON THE RANGE



for greater protection



● A brand-new kitchen range, just out of the crate, without a scratch to mar its sales appeal! For one thing, MYSTIK TAPE seals the oven door and table top safely shut, protecting them against rattling or banging open. "Self-Stik" MYSTIK is easily applied, easily removed—can be applied and removed again and again without marring the sparkling surface of the range in any way.

But that's only one of the countless MYSTIK uses with which alert manufacturers are solving tough problems in packaging—packing—shipping. MYSTIK won't scratch the finest finish—metal, wood, plastic, glass, porcelain, paint, etc.

And MYSTIK used as a seal safeguards against water, dampness, salt spray, dust, vermin, fungus. Why not let MYSTIK Self-Stik CLOTH TAPE help with your protection problems? Get MYSTIK from your distributor or write for free offer below.

FREE — *A sample roll of the new* MYSTIK *Self-Stik* CLOTH TAPE *to help with your packing—packaging—shipping or production plans. No obligation. Write Mystik Adhesive Products, 2637 N. Kildare, Chicago 39, Illinois.*

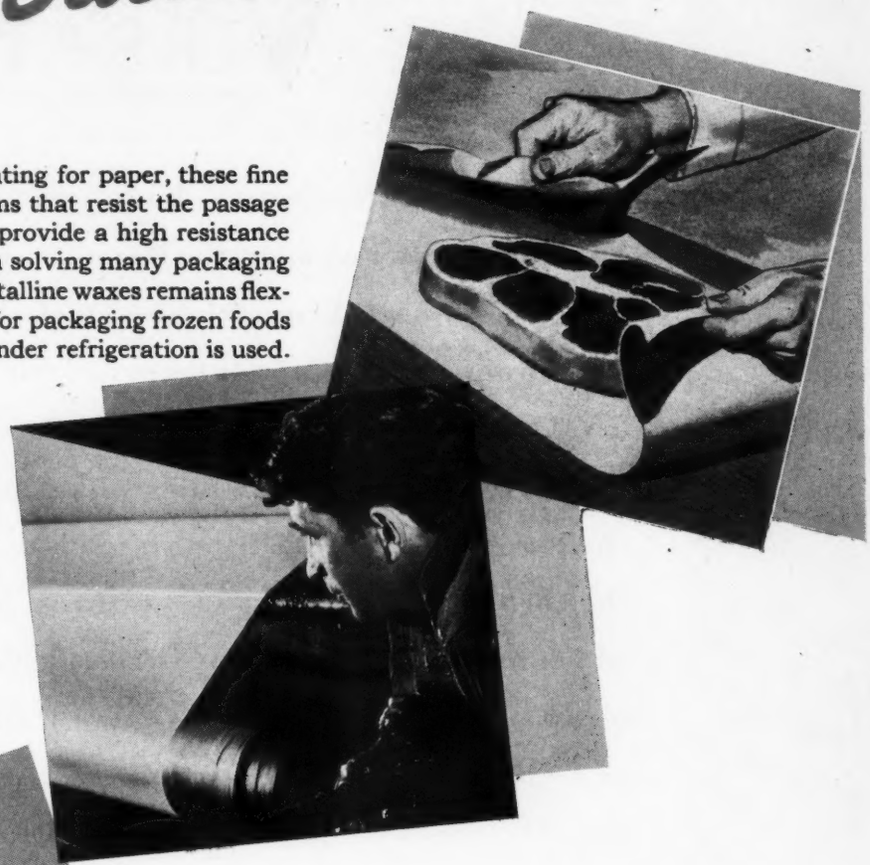
Sales offices in all major cities and Canada—export office New York City.

MYSTIK
Self-Stik
ADHESIVE PRODUCTS

Self-Stik Cloth and Paper Tapes, Protective and Masking Materials, Waterproof Packaging Papers, Advertising Signs and Displays, Self-Stik Stencils

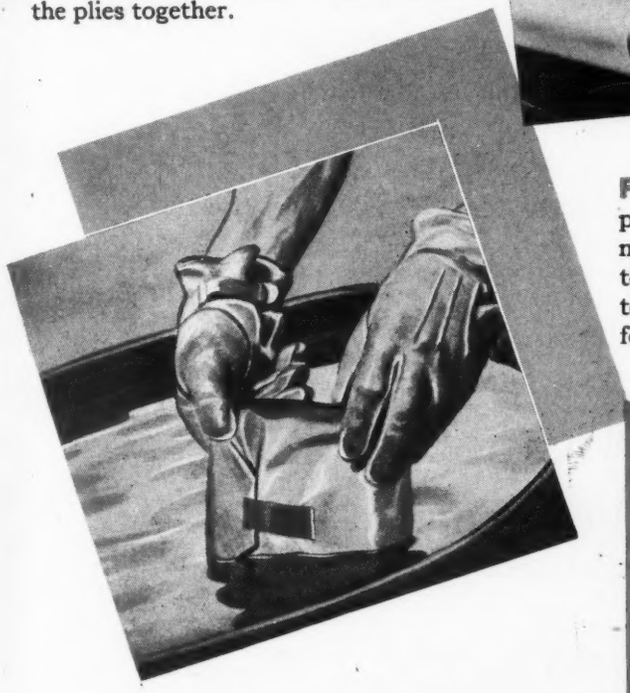
SURE WAY TO IMPROVE YOUR POST-WAR PACKAGING...

Make the Most of Microcrystalline Waxes!



FOR WAX PAPERS—Used as coating for paper, these fine particle waxes form tough, durable films that resist the passage of water and water vapor. They also provide a high resistance to grease, a factor that is important in solving many packaging problems. Paper coated with microcrystalline waxes remains flexible at low temperatures. This is vital for packaging frozen foods and other perishables when storage under refrigeration is used.

FOR LAMINATIONS—Already in use in virtually all types of laminations, these waxes provide many advantages over water soluble binders such as starch, dextrine, silicate of soda and casein. They are inherently adhesive and highly resistant to moisture. Thus, they form a continuous layer of wax between the paper plies that's not only a barrier to moisture, but also a strong bond to hold the plies together.



FOR DIP SEALS—This use of microcrystalline waxes proved highly efficient during the war. U. S. Army Procurement specified them for packaging everything from K rations, to metal parts for planes, ammunition. New possibilities point to the same light-weight, flexible protection for dehydrated foods, medicines and many other products.

CALL IN SOCONY-VACUUM PROCESS PRODUCTS RESEARCH AND SERVICE—

SOCONY-VACUUM OIL CO., INC.

26 BROADWAY, NEW YORK 4, N. Y.

Process Products
SOCONY-VACUUM

Standard Oil of N. Y. Div.
White Star Div. • Lubrite Div.
Chicago Div. • White Eagle Div.
Wadhams Div. • Magnolia
Petroleum Co. • General
Petroleum Corp. of California

TUNE IN "INFORMATION PLEASE"—MONDAY EVENINGS, 9:30 E.W.T.—NBC

NOW IT'S V FOR

VERSATILITY!

Packaging fabricators know that, whatever their specifications for a paper, the Decotone-Fitchburg organizations can meet them with base stock or converted paper built from the pulp up for its particular end use.

This versatility in creating a stock for a specific use is backed by production and processing facilities unusual in their scope. At the mill, a formula is devised of precisely the correct foundation stock for the conditions of service which must be met. At the Decotone plant is the equipment and know-how for converting this into a specialty paper by processing with coatings, lacquering, embossing, foil, cloth, or cast film laminating, or printing with aniline or gravure inks.

Our technicians are qualified to advise packagers on problems concerning paper. You are invited to consult them without obligation.

DECOTONE PRODUCTS DIVISION

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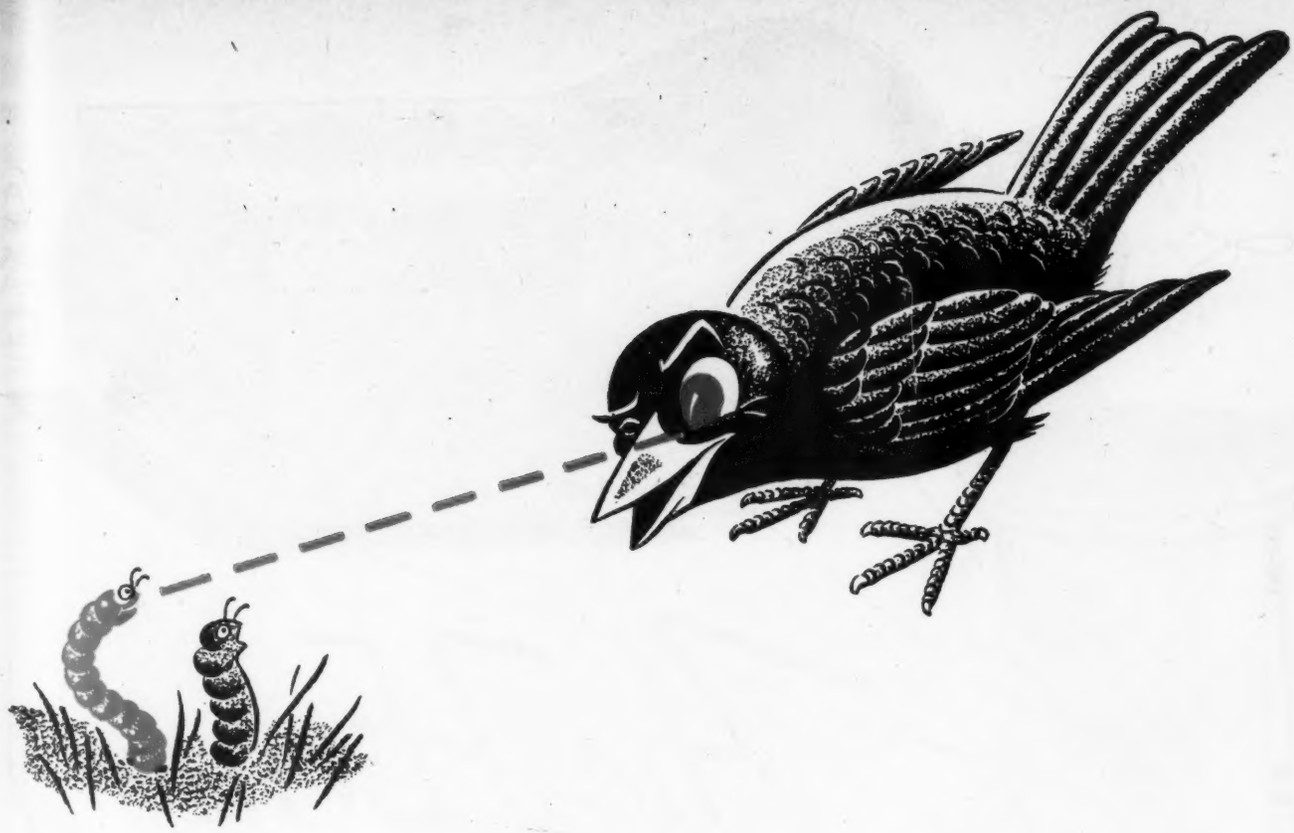

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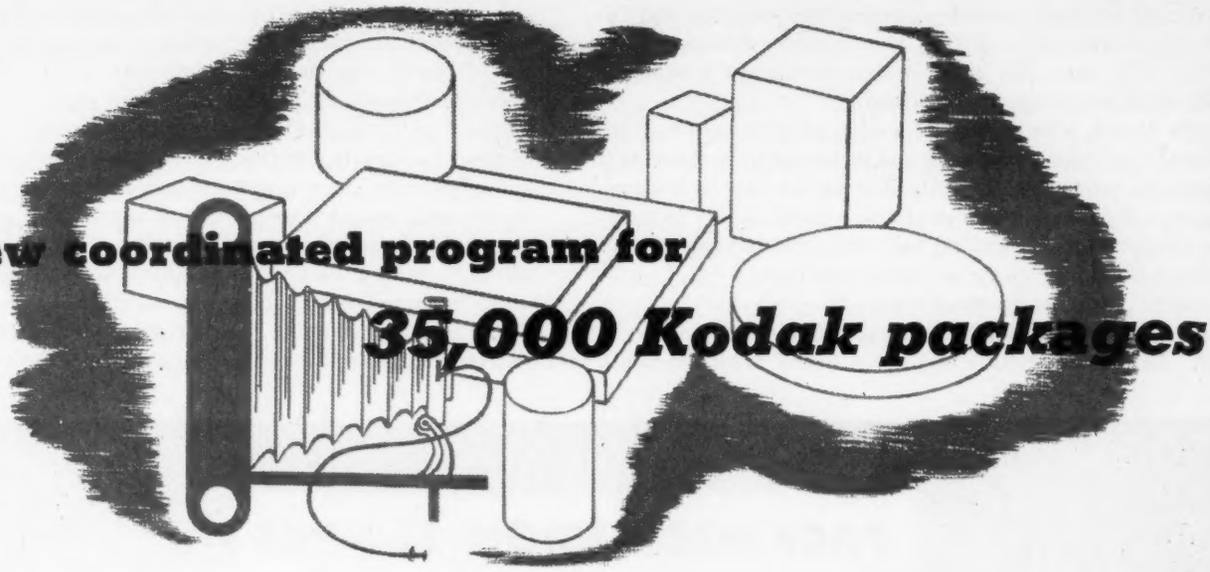
VOLUME 19 OCTOBER, 1945 NUMBER 2



New coordinated program for 35,000 Kodak packages

The Eastman Kodak Co. has just approved one of the most comprehensive packaging organization set-ups ever attempted in American industry. The plan covers the writing of detailed specifications for more than 35,000 different packages and a program of coordination and package service for every phase of packaging operations throughout the company's three plants in Rochester.

The plan represents two years of work which began in August 1943 with a study of the packaging operations of seven nationally known companies selected as being outstanding based on information and advice obtained through MODERN PACKAGING, American Management Assn., Can Manufacturers' Institute and Packaging Institute.

A comparison of the packaging organizations of these seven companies with the system in effect at Eastman Kodak Co. led to two conclusions:*

1. That none of the plans studied could be used in its entirety as a pattern for recommendation at Kodak.
2. That the size and complexity of the packaging problem at Kodak were considerably greater than those of any of the companies contacted.

After giving consideration to these conclusions and careful study of the organizational needs for a company of the size and complexity of Kodak, the authors of the Kodak plan submitted their recommendations, all of which were approved by management on July 15 of this year.

This complete reorganization of packaging activities was undertaken in anticipation of the quick return to normal merchandising activities immediately after the cessation of hostilities. The company realized that soon after the war requests for package revisions and new packages would be coming from every department. To avoid confusion resulting from all of them coming at once and the tendency for decentralization in packaging operations under such a rush of orders it was felt that proper procedure should be established to handle this increasing civilian production. A further consideration was the recognized need for improved packages to meet increasing competition in the photographic field.

* See pages 97, 98, 99 and 100.

The Eastman Kodak packaging plan will be administered by Kenneth R. Marvin, Industrial Engineering Department, Kodak Park, and Richard Holtz, Packaging Division, Kodak Office. Much credit is due to Kodak for making details of the plan available to readers who may have similar packaging developments.

The plan also represents the first complete coordination of both physical and design aspects of packaging at Kodak and is in line with what is happening to packaging activities in every large industry due to the interest in packaging that has been heightened during the war by improved protective features, the technical aspects of military specifications and the desire for more attractive packages in the postwar competitive markets.

Packaging operations at Kodak began in a large way around the turn of the century. At that time you bought a camera for about 25 dollars. It was sent to you from Rochester loaded with roll film containing a hundred exposures. The slogan was "you press the button, we do the rest." You took your pictures, sent the camera back to Rochester. There, the exposed film was removed, developed and printed. The prints and the camera, reloaded with a hundred new exposures, were then returned to you for about $10. As cameras, films and packaging methods were improved, there was no longer any need for sending the camera back and forth. The familiar yellow packages of film began to appear with their red "Kodak" logotype. Mr. Eastman liked yellow;

knew its visibility value. The yellow package has come to mean "Kodak" to millions of people and is being used on nearly all Kodak packages. For a period of nearly 30 years, the design aspects of Kodak packages were under one head, but the physical and mechanical aspects of the packaging were left for the most part to the various departments. Protective requirements for the packaging of film, for instance, were entirely up to the division which produced this product. Not until 1939 was the first packaging division set up and this division's activities still dealt mostly with package appearance. The new plan endeavors to coordinate appearance with all physical aspects of packaging.

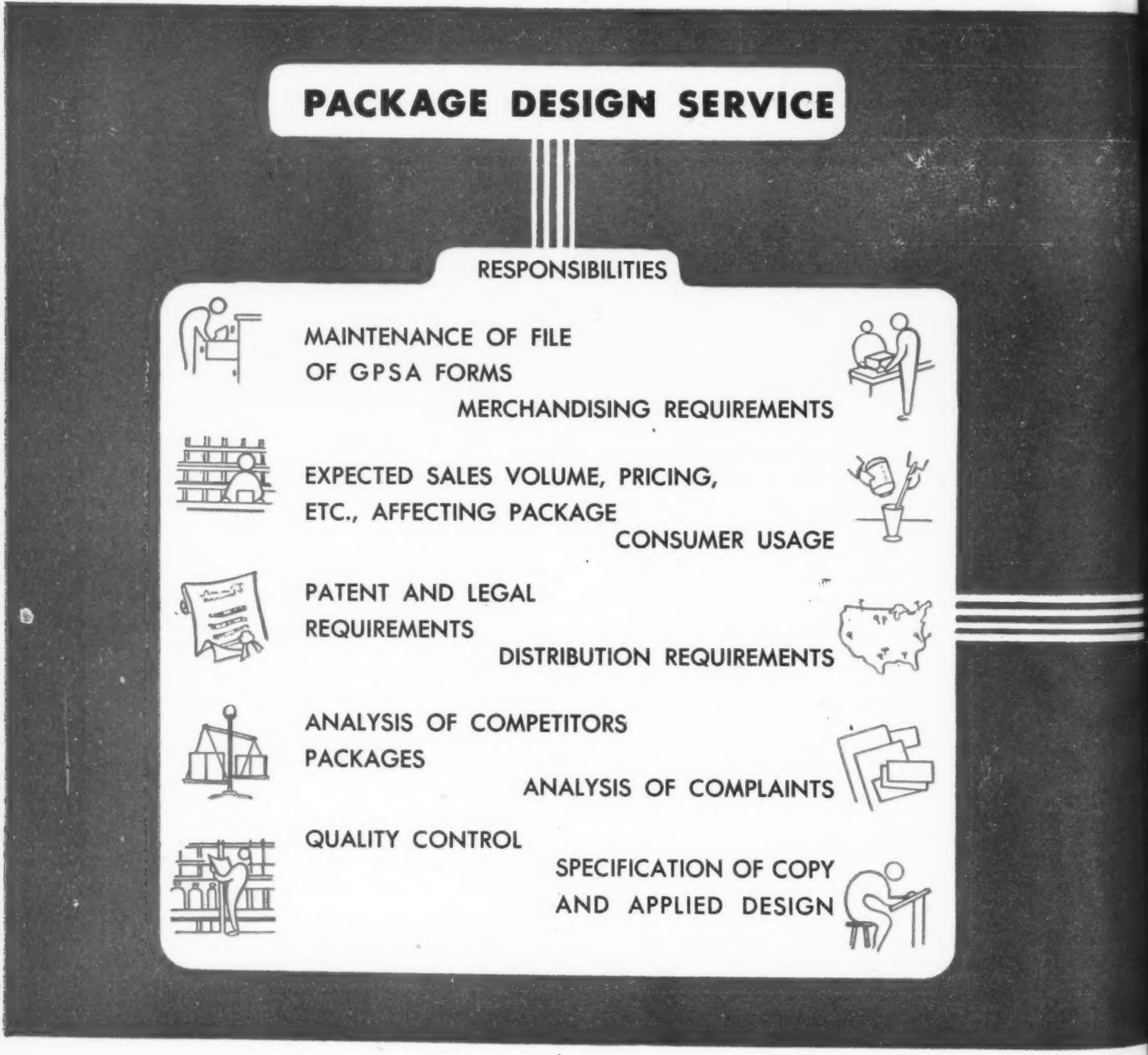
The Kodak plan defines packaging as a means by which a unit of product is protected and identified from the time it leaves the production line until it is put into use by the consumer. A package, the plan states, consists of all the materials required to accomplish this, from the innermost wrap through the shipping case and all its markings.

It lists that a good package must:

1. Lend itself to efficient, economical production.
2. Be able to provide protection to the product against all hazards to which it is likely to be subjected at any time.
3. Identify the product in a manner consistent with the quality of the merchandise it contains and the character of its sponsor.
4. Offer maximum convenience to the consumer at time of opening, during use and as a storage container where required.

Proceeding on the thesis that to assure good packages, a company-wide system of coordination and control is essential, the authors of the Kodak package organization plan felt that to meet this company's problems, such coordination and control logically divides under two groups which they have called Physical Package Service (a division of the Industrial Engineering Dept.), covering the physical structure and production aspects, and Package Design Service, covering appearance and consumer use aspects. Two representatives of company management have been appointed, one to whom Physical Package Service will report and the other to whom Package Design Service will report.

The authors of the plan realize that very few organizations will require this two-head plan, but because of the complexity



of Kodak activities and the location of the three plants and office building in various parts of the city, such a plan provides the only logical set-up for an operation of this size and for the problems involved.

The basic instrument of this system of coordination and package service will be a General Package Specification Approval to be known as GPSA. As a "specification-approval," this will incorporate the company's former package approval card system and, in addition, carry specific information covering the method of completely packaging any given product for shipment.

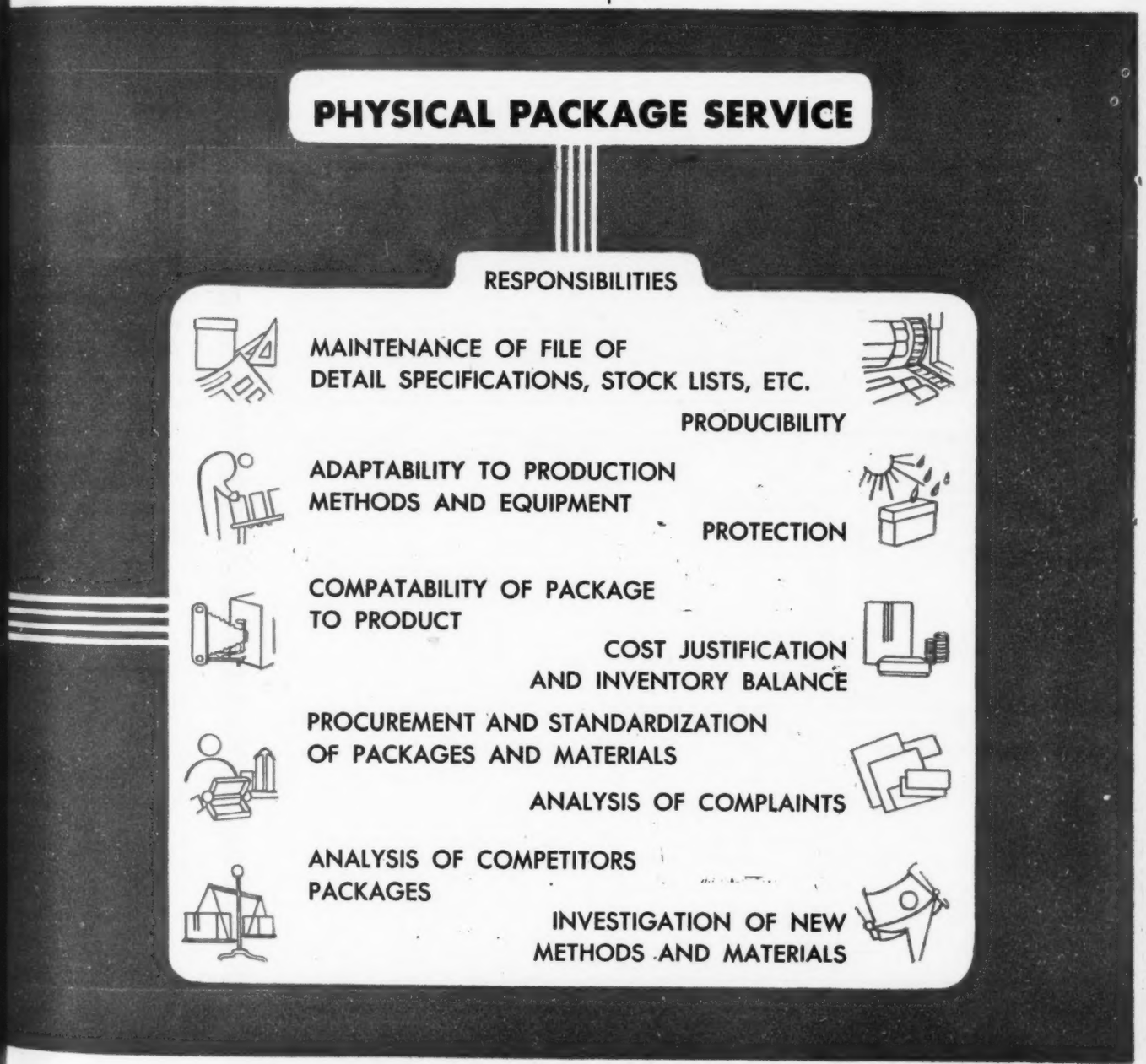
The GPSA form describes inner packing, unit packing (sales unit), intermediate packing (distribution unit), shipping case and all markings thereon and package inserts (instructions and advertising). (See Fig. 2, p. 94) Under each of these headings, reference is made to detail specifications (Fig. 3, p. 95), stock lists, prints and drawings, which, by means of a supplementary file, will make available complete information on all items of material which go to make up a package. Included with the listing of detail specifications is the quantity of each item required to assist the cost department in establishing standard packaging costs. The completed specifications, when issued with necessary signatures of approval, serve as authorization to produce the package.

The preparation and maintenance of the general specifications, detail specifications, stock lists, prints and drawings are the major functions of the two service groups set up under the plan, namely, Package Design Service and Physical Package Service. The specific responsibilities of these two groups are shown in Fig. 1.

Operations of the Eastman Kodak Co. included in the package organization plan are as follows: Kodak Park Plant, which makes all types of photographic supplies including films, papers, chemicals; Camera Works, which produces all types of photographic equipment, cameras, projectors and accessories; Hawkeye Works which produces optical goods, lenses and filters; Kodak Office where is lo-

(*Continued on page 96 following Figs. 2 & 3*)

1—*Pictorial diagrams show division of responsibilities under two-head Kodak packaging organization.*


PHYSICAL PACKAGE SERVICE
RESPONSIBILITIES
MAINTENANCE OF FILE OF DETAIL SPECIFICATIONS, STOCK LISTS, ETC.
PRODUCIBILITY
ADAPTABILITY TO PRODUCTION METHODS AND EQUIPMENT
PROTECTION
COMPATABILITY OF PACKAGE TO PRODUCT
COST JUSTIFICATION AND INVENTORY BALANCE
PROCUREMENT AND STANDARDIZATION OF PACKAGES AND MATERIALS
ANALYSIS OF COMPLAINTS
ANALYSIS OF COMPETITORS PACKAGES
INVESTIGATION OF NEW METHODS AND MATERIALS

2

GPSA *General Package Specification Approval* Kodak Park No. 000

PRODUCT	SIZE OR TYPE	DEPARTMENT
● Roll Film, Super-XX	● 620 Domestic Packing	● Roll Film

INNER PACKING

"Exposed sticker for re-sealing roll (printed black on white paper); Roll sealed with Outside Paster Band (Printed black & green on white paper); Roll machine-wrapped in moisture re-sistant paper, instruction sheet inside wrap.

WT.

COMPONENTS	SIZE OR CODE	COPY	REFERENCE	QUAN.*
Exposed Sticker	6 3/4" x 2 3/16"	FF0000-0	FF0000	1
Black Ink			RM0000	
Outside Paster Band	5/8" x 1 3/4"	FF0000-0	FF0000	1
Black Ink			RM0000	
Green Ink			RM0000	
Wrap	3 3/4" x 7 1/8"		FF0000	1

UNIT PACKING

Each wrapped roll mechani-cally inserted in folding carton with glue flaps. Carton printed in green and black on yellow board. Expiration date and code stamped on bottom panel during cartoning opera-tion.

WT.

COMPONENTS	SIZE OR CODE	COPY	REFERENCE	QUAN.*
Carton	620-8	FF0000-0	FF0000	1
Green Ink			RM0000	
Black Ink			RM0000	
Adhesive (side seam)			RM0000	
Adhesive (end flaps)			RM0000	
Stamping ink			RM0000	

INTERMEDIATE PACKING

24 cartons (arrangement 6 x 4) wrapped in water-resistant paper. Package sealed one end with black paper and on opposite end with yellow label printed in black. Label stamped with expiration date.

WT.

COMPONENTS	SIZE OR CODE	COPY	REFERENCE	QUAN.*
Wrap	9" x 12"		FF0000	1/24
Seal	4 1/2" x 2 3/4"		FF0000	1/24
Label	4 1/4" x 2 3/4"	FF0000-0	FF0000	1/24
Stamping Ink			RM0000	

SHIPPING CASE

576 rolls (24 packages arrangement 6 x 4) in Style 4 corrugated case. Top and bottom stapled 9 staples to length. Printed in black 2 sides, 1 end. Stamped with name of film and expiration date on end.

WT. 60 lbs.

COMPONENTS	SIZE OR CODE	COPY	REFERENCE	QUAN.*
Case	2071c	FF0000-0	FF0000	1/576
Staples			RM0000	18/576
Black Ink			RM0000	
Stamping Ink			RM0000	

INSERTS

Direction sheet printed in black on white paper.

WT.

COMPONENTS	SIZE OR CODE	COPY	REFERENCE	QUAN.*
Direction Sheet		FF0000-0	FF0000	1
(Trim Size)	4 1/8" x 6 1/8"			
(Folded)	2 1/8" x 2 3/16"			
Black Ink			RM0000	

*per each roll

2—*Sample of Kodak's General Package Specification Approval (GPSA) form for roll film, Super XX. Zeros are used to show spec numbers, as some of these specs are not yet issued.*

3—*Detail Packaging Specification refers to carton (FF-0000) shown as first component under unit packaging on GPSA form. All other numbers listed under reference column on GPSA form refer to Detail Packaging Specs similar to the one shown right, covering each of components listed.*

Detail Packaging Specification • No. FF-0000

KF 30360

PRODUCT	TYPE
● CARTON, FOLDING	● No. 620 Roll Film (Domestic)

CONSTRUCTION	PERFORMANCE STANDARDS
A folding carton made from Kodak yellow clay coated S.M.L. newsboard suitable for packaging photographic roll film.	Tumble test. No. T6P Drop test. No. T4P Compression test. No. T2P Fatigue test. No. T7P Abrasion test. No. T13P Vibration test. No. T17P

DIMENSIONS

Newsboard .016 caliper

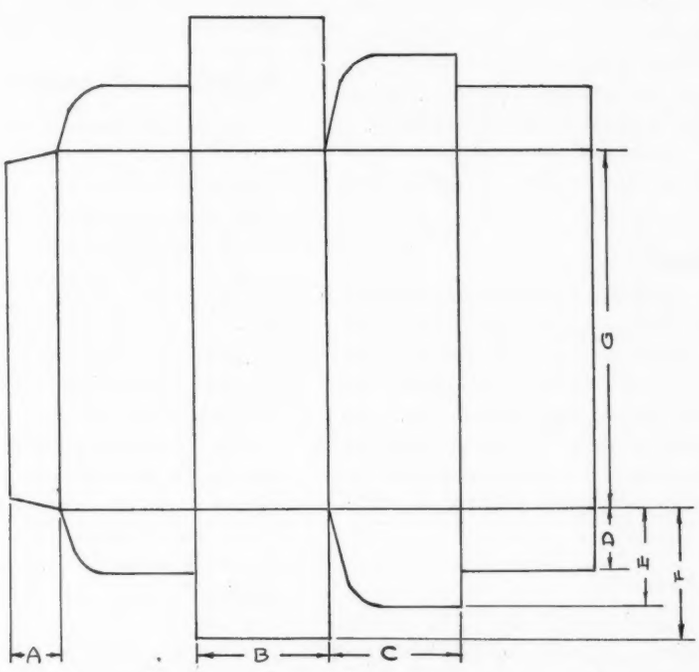
A - 15/32"
B - 31/32"
C - 31/32"
D - 19/32"
E - 3/4"
F - 31/32"
G - 2 3/4"

CONTENTS	MISCELLANEOUS
Kodak yellow clay coated S.M.L. newsboard - RM-0000 Black ink - RM-0000 Green ink - RM-0000 Adhesive No. 9862 - RM-0000	

SUPPLIER	SUPPLIER'S CODE	COPY No.
K. P. Printing Department	620	12

Detail Packaging Specification • Sketch Sheet • No.

ITEM	DRAWN	CHECKED



cated the purchase stock department which packages such items as thermometers and dark room accessories.

Physical package service

Headquarters of the Physical Package Service will be located at Kodak Park, because the majority of the packages are fabricated there. The company makes most of its own boxes, cartons, some metal containers, bags and envelopes. It was also felt desirable to have this service at Kodak Park, because materials for much of the packaging for all the plants are procured through the Kodak Park purchasing department. There are also in existence at Kodak Park certain facilities for specialized testing of materials and packages not available in the other plants.

Physical Package Service will have a fully equipped Package Proving Room to conduct tests on packages and packaging materials in addition to those conducted by the departments packaging the products. This proving room is to be equipped with all necessary facilities for package development and testing in accordance with approved scientific methods. It will also have access to specialized testing facilities now in existence at Kodak Park.

The Proving Room will make available to all plants and departments the following services:

1. Package development service for those departments requiring it, a service which did not previously exist.
2. Uniform testing procedures for finished packages and packaging materials.
3. Standardization of materials to facilitate more economical purchasing.
4. Investigation of new methods and materials.

Personnel of the Physical Package Service group, which is to be considerably augmented in the future, will consist of the supervisor, laboratory technicians and assistants, specifications writers, a shipping case designer and clerical staff.

Package design service

Headquarters of the Package Design Service is located at Kodak Office. In carrying out its functions it will thus be in close contact with sales, advertising, market research, patent and legal, development, general production, art and engraving departments, all of which are in this location. This group will also be a central source of packaging information for all plants, independent of the manufacturing departments.

Personnel for this group consists of the supervisor, assistant to supervisor, specifications editor, designer and clerical staff.

Plant packaging representatives

Each plant will appoint a packaging representative whose duties will be to coordinate the packaging activities of his plant with the two above-mentioned service groups. The operation of the printing request system for obtaining approval on printed matter will also be his responsibility. He also supervises the development of packages for new products, unless it is requested that development be done by the Physical Package Service and see that these new packages are submitted to Physical Package Service.

Procedure for revising packages

All departments will be supplied with the GPSA forms (General Package Specification Approval) on which all revisions shall be submitted for approval. Recommendations for revision may originate in the department packaging a product. In this case, the department, through its plant packaging representative, sends the GPSA forms, together with a sample of the recommendation or (with a request that the packaging recommendation be supplied by the Physical Package Service) to Physical Package Service.

If a recommendation for package revision originates at Kodak office through sales, advertising or legal departments, it will be referred to Package Design Service. If the recommendation involves a physical change it will be passed on to Physical Package Service.

The Physical Package Service then checks the recommendation against the current method from a physical and production standpoint. If the recommended method is approved, notations are made on the GPSA form of the necessary changes in detail specifications, stock lists, prints and drawings. The report of the findings of this group, together with recommendation and samples, are then sent to Package Design Service and a copy of the report is sent to the department initiating the recommendation.

If the recommendation is rejected by Physical Package Service a report of reasons for rejection is submitted to the department initiating the recommendation. Differences of opinion will be settled by a variable committee consisting of the plant packaging representative, plant production representative, package fabricator if he is needed, Physical Package Service representative and management representative.

The Package Design Service checks the recommendation against the current method from the appearance and consumer convenience standpoint. If the change is approved, the revised GPSA form is issued to the department packaging the product. If rejected, a report of reasons is submitted to Physical Package Service.

Differences of opinion on package appearance, design or copy are to be settled by a variable committee composed of representatives of all departments involved, such as sales, advertising, etc., together with Package Design Service representatives and management.

Differences of opinion involving form, construction or other features of the package from a customer use or merchandising standpoint will be settled by a joint meeting of the two variable committees who can act as a "high court" to iron out all problems which cannot be settled otherwise.

Package for new products

All product approvals or advance notice thereof are to be routed to both Physical Package Service and Package Design Service for signature. As soon as Package Design Service signs product approval the department packaging the new product will be requested to submit recommendations for the package. The department packaging the new product will either (a) submit the recommendation for the package to Physical Package Service or (b) request that the package be developed by Physical Package Service. Approval is then obtained by the same procedure as outlined under the revision of packages above.

The recommendation for the new plan was presented to the various Kodak plants and to top management in a series of nine meetings, at which the plan was outlined by means of charts and diagrams (Fig. 1). Copies of the recommendation and the survey were made available to each person attending the meetings. The survey was printed in book form and compares the Kodak packaging organization as it was then set up with the way packaging operations were conducted in the seven other companies which had been contacted by personal interviews. The first meeting was attended by the general sales (*Continued on page 182*)

At left in this table are the questions that Kodak asked in making its study of seven nationally known companies. The center column shows Kodak's answers to these questions when the survey was made. At right are answers based on the revised Kodak packaging set-up today.

METHOD OF OBTAINING PACKAGES

QUESTIONS	KODAK PACKAGING SET-UP—1943	REVISED KODAK SET-UP—1945
I. NEED FOR PACKAGE		
1. How and by whom is it decided that a new or revised package is needed?	(a) Production Department as result of a new product. (b) Sales Department to meet new or changing trade requirements or as result of complaints from trade. (c) Manufacturing Experiments decide product requires better protection. (d) Production Department requests new package to reduce manufacturing costs, facilitate production, etc. (e) Printing Department or Box Department to facilitate manufacture or reduce cost.	(a) Production Department as result of a new product. (b) Sales Department to meet new or changing trade requirements or as result of complaints from trade. (c) Manufacturing Experiments decide product requires better protection. (d) Production Department requests new package to reduce manufacturing costs, facilitate production, etc. (e) Printing Department or Box Department to facilitate manufacture or reduce cost.
2. To whom is this decision referred for action?	Any one or combination of the following: Packaging Division, Industrial Engineering, Film Waste Control, Printing, Box Department, Can Shop, Outside Vendor, Shipping Department, Production Department.	If originating in departments mentioned in a, c, d or e above, referred to Physical Package Service. If originating in b above, referred to Package Design service.
3. When? (In case of new product at what stage of product development?)	In some cases as soon as form of product is known; in other cases not until shortly before package is required for production.	Just as soon as size and form of product are known.
II. PACKAGE REQUIREMENTS		
1. Are the following factors given consideration in establishing package requirements and if so, by whom?	(a) Distribution—Sales Department. (b) Protection—Production, Research, Manufacturing Experiments, Paper Service, Shipping. (c) Utility—Packaging Division, Sales Department. (d) Cost—Sales, Box Department, Printing, Can Shop, Production, Purchasing. (e) Appearance—Packaging, Sales, Advertising. (f) Producibility—Packaging, Box Department, Printing, Can Shop, Production, Purchasing. (g) Materials—Packaging, Industrial Engineering, Manufacturing Experiments, Box Department, Printing, Can Shop, Purchasing, Production. (h) Patent and Legal—Patent and Legal Departments. (i) Expected Volume—Sales, Statistics. (j) Case Quantities or Packing Units—Sales, Industrial Engineering, Shipping, Production.	(a) Distribution—Sales or Market Research Department, through Package Design Service. (b) Protection—Production, Research, Manufacturing Experiments, Paper Service, Shipping through and augmented by Physical Package Service. (c) Utility—Package Design Service through cooperation with Sales Market Research Department. (d) Cost—Physical Package Service, Package Design Service, Sales, Box Department, Printing, Can Shop, Production, Purchasing. (e) Appearance—Package Design Service, Sales, Advertising Market Research. (f) Producibility—Physical Package Service, Box Department, Printing, Can Shop, Production, Purchasing. (g) Materials—Physical Package Service, Package Design Service, Industrial Engineering, Manufacturing Experiments, Box Department, Printing, Can Shop, Purchasing, Production. (h) Patent and Legal—Patent and Legal Departments through Package Design Service. (i) Expected Volume—Sales, Market Research through Package Design Service. (j) Case Quantities or Packing Units—Sales, Market Research, Shipping in conjunction with Physical Package Service and Package Design Service.
III. PACKAGE DEVELOPMENT		
1. Physical package developed by whom?	Any one or combination of the following: Production Department, Industrial Engineering, Packaging Division.	Plant Packaging Representative or Physical Package Service.
2. Applied design developed by whom?	Packaging Division, in cooperation with Sales and Advertising.	Package Design Service.
3. Procedure		
(a) How is type of package determined?	No uniform procedure.	(a) Sales, protection, manufacturing considerations.
(b) How is type of construction determined?	Cost, type of product and quantity required.	(b) Cost, type of product and quantity required.
(c) How is type of material determined?	Determined by established requirements and tests.	(c) Determined by established requirements and tests.
(d) How is development coordinated with product production department?	Usually personal contact between department developing package and Production Department involved. However, there is no established procedure for coordinating this phase of the work.	(d) Physical Packaging Service and Package Design Service work through Plant Packaging Representative.

(*Table continued on next page*)

QUESTION	KODAK PACKAGING SET-UP—1943	REVISED KODAK SET-UP—1945
(Package development cont'd)		
(e) How is development coordinated with package supplier?	Samples furnished by supplier during course of development are checked by Production Department.	(e) Contact with supplier through Physical Package Service and coordinated with Production Department through Plant Packaging Representative.
(f) How is development coordinated with merchandising requirements?	In many cases, no consideration is given to this at all, or until development is completed.	(f) Through Package Design Service.
(g) How is development of physical package coordinated with development of applied design?	Usual procedure here is to submit the approved physical package to Packaging Division for application of design.	(g) Cooperation between Physical Package Service and Package Design Service through frequent meetings.
IV. TESTING		
1. Which of the following tests are used and by whom are they conducted?		
(a) Tumbling—	Industrial Engineering and/or Production Department.	(a) Physical Package Service.
(b) Abrasion—	Industrial Engineering and/or Production Department.	(b) Physical Package Service.
(c) Dropping—	Industrial Engineering and/or Production Department.	(c) Physical Package Service.
(d) Shipping—	Shipping Department.	(d) Shipping through Physical Package Service.
(e) Moisture permeability—	Manufacturing Experiments, Industrial Laboratory, Paper Service.	(e) Manufacturing Experiments, Industrial Laboratory, Paper Service coordinated by Physical Package Service.
(f) Corrosion—	Industrial Laboratory, Industrial Engineering, Production Department.	(f) Industrial Laboratory and Production, coordinated by Physical Package Service.
(g) Market—	None.	(g) Market Research through Package Design Service.
(h) Fabrication—	None.	(h) Package Supplier through Physical Package Service.
(i) Chemical compatibility—	Manufacturing Experiments, Production Department.	(i) Manufacturing Experiments, Production Department through Physical Package Service.
(j) Physical compatibility—	Production Department.	(j) Production Department through Physical Package Service.
(k) Loading or filling—	Production Department.	(k) Production Department through Physical Package Service.
(l) Color stability—	Research Laboratory.	(l) Package Design Service, Physical Package Service, Research Laboratory, Industrial Laboratory.
(m) Impact—*	.....	(m) Physical Package Service.
(n) Compression—*	.....	(n) Physical Package Service.
* Not included in old package set-up.		
V. APPROVAL TO PRODUCE		
1. By whom?	Package approval Card issued by Packaging Division. In some cases, packaging changes are made by Production Department and covered by Product Approval Card.	GPSA form (General Packaging Specification Approval) issued by Package Design Service.
2. Who makes final decision when a difference of opinion exists on a packaging problem?	Sometimes necessary to obtain a decision from management.	Variable committees.
3. How are approvals recorded?	Package Approval Card on file in Packaging Division.	On reverse side of GPSA form.
VI. PRODUCTION		
1. Specification of package		
(a) Assembled by whom?	Production, Industrial Engineering, Purchasing.	(a) Assembled by Physical Package Service, edited and issued by Package Design Service.
(b) Includes what information?	Complete package specifications not generally used. Detail specifications on package components in some cases.	(b) Includes complete specifications on inner packing, unit packing, intermediate packing, shipping case with all markings, inserts.
2. Fabrication of package		
(a) Produced entirely within organization.	Some.	(a) Cartons, boxes, printed labels some metal containers, some bags and envelopes.
(b) Produced entirely outside organization.	Some.	(b) Shipping cases (wood, fibreboard, corrugated), glass containers and closures, specialty boxes, some metal containers, flexible containers.
(c) Quality control	Quality of appearance checked by Packaging Division. No established procedure for physical quality control.	(c) Inspection at source—further procedure for quality control being studied.

Question	Kodak Packaging Set-up—1943	Revised Kodak Set-up—1945
(Production cont'd)		
3. Packaging of Product		
(a) Mechanical automatic.	Yes.	(a) Yes.
(b) Mechanical semi-automatic.	Yes.	(b) Yes.
(c) Manual	Yes.	(c) Yes.
(d) Special conditions	Darkroom, extreme fire precaution, contamination.	(d) Darkroom, extreme fire precaution, contamination.
GENERAL INFORMATION		
I. Coordination		
1. How and by whom are the steps for obtaining packages correlated?		
(a) I–II Need for Package-to-Package Requirements	No established procedure.	(a) GPSA form inaugurated.
(b) II–III Package Requirements-to-Package Development	No established procedure.	(b) Physical Package Service.
(c) III–IV Package Development-to-Testing	No established procedure.	(c) Physical Package Service.
(d) IV–V Testing - to - Approval to Produce	No established procedure.	(d) GPSA form with completed data is circulated for approval.
(e) V–VI Approval to Produce-to-Production	Printing Request Approval System functions very well in so far as printed material on or in unit package is concerned. (See IV, 1, to follow.)	(e) Approved GPSA form issued by Package Design Service.
II. Extent of Service		
1. How many plants, divisions or departments are served by the packaging organization?	Four.	Four at present.
2. Are all handled in the same way?	No.	Yes.
3. Is there inter-department coordination or control?	Only on printed matter and applied design.	Yes. Through Plant Packaging Representative, Physical Package Service, Package Design Service.
III. Packaging Committee		
1. Has your Packaging Committee a fixed personnel or is it flexible?	Fixed.	Two variable committees are used.
2. What is the representation on the committee?	Sales, Advertising, Packaging Division, Shipping, Manuals, Certain Production Departments, Printing.	(a) Variable committee on physical problems includes Plant Packaging Representative, Plant Production Representative, Package Fabricator if needed, Physical Package Service Representative, Management Representative. (b) Variable Committee on design problems—sales, advertising, market research, etc., management and Package Design Service Representative.
3. What are the functions of the committee?	Committee was formed to establish a design program. Committee established the system for approval of printed matter and to a certain extent, other packaging changes.	Committee convenes only in cases of differences of opinion.
4. Who is its head?	Director of Advertising Operations, Chairman.	Supervisor of either Physical Package Service or Package Design Service, depending on nature of problem.
5. How frequently does the committee convene?	Until the war emergency, committee convened regularly—from then on at irregular intervals to review packaging changes already put in effect.	Meetings scheduled only when problems arise.
6. Are its activities and decisions reported generally?	Minutes of committee meetings circulated to selected list.	No.
IV. Routine		
1. Is there a system established for the approval of printed matter?	Yes. Production issues Request for Approval of Printing to Packaging Division. Copy, design, patent and legal information supplied by Packaging Division. Signed Request serves as authorization to print.	Yes—Production issues request for Approval of Printing to Package Design Service. Copy, design, patent and legal information supplied by Package Design Service. Signed request serves as authorization to print.

(Table continued on next page)

Question	Kodak Packaging Set-up—1943	Revised Kodak Set-up—1945
(Routine, cont'd)		
2. Are directions and instructions handled the same way as packaging supplies?	Yes.	Yes.
3. What system is used for maintaining specifications on packaging?	No established system.	GPSA form supplemented by detailed specifications.
4. Is this system centralized?	No.	Yes.
V. Program Costs		
1. Is there an appropriation for package development?	Not as such.	Not as such.
(a) How is the amount of appropriation determined?	No established limits.	(a) No established limits.
(b) To what is this expense charged?	Against production cost in most cases.	(b) Against production cost in most cases.
2. Have you a formula for determining:		
(a) Amount to be spent for developing a new package?	No.	(a) No.
(b) Relationship between package cost and the selling price of the product?	No.	(b) No.
VI. Competitors' Packages		
1. Is a method established for regularly obtaining competitors' packages for analysis?	No.	Yes. Through Market Research and Sales Department.
VII. Complaints		
1. Are all complaints pertaining to packaging referred to the packaging organization for disposition?	Not completely. Efforts are now being made to establish a system.	Yes. Through sales and production departments.
VIII. New Materials and Techniques		
1. What method is used for keeping informed on new packaging materials, equipment, tests, methods, etc.?	Trade publications, vendors, expositions.	Business and technical publications, vendors, expositions and field trips.
IX. Planning		
1. Are packaging representatives consulted at the time plans are being made for new product or line of products?	Seldom.	Yes.
X. Quality Control		
1. What attempts are made to follow up packaging in production to determine whether specifications are being met?	No established method of checking.	Periodic inspection of finished stock—further procedure for quality control being studied.
XI. Bulk Packages		
1. Have you any products packaged in "Service Packages" for large users, not intended for over-the-counter sales? Are they given same considerations as regular consumer packages?	Yes.	Yes.
XII. Packing		
1. Are packing and shipping problems handled by same organization that handles unit packages? If not, by whom?	No. Industrial Engineering and Shipping maintain specifications for packing.	Yes. Insofar as the problem relates to packaging.
2. Is this group responsible for correct interpretation of shipping regulations?	Shipping Department.	Shipping Department.
3. Are specifications for packaging and packing combined or separate?	Separate.	Combined.

1—Greenfield's new boxes for larger-sized taps (foreground) afford striking identity in comparison with former designs. Four different colors were used for the new boxes to designate different degrees of precision grind.

Taps and dies . . . protected and convenient

"Greenfield" taps and dies are probably known to most of the world's best mechanics—including the week-end and holiday variety as well as the full time man.

The company that makes them doubtless knows more about how to thread holes in metal, plastics—or what have you—than any other manufacturer in the world. Certainly their catalog shows every conceivable gadget for that purpose—taps, drills, dies, screw plates, thread gauges—in dozens of types and hundreds of sizes.

These must be kept corrosion-free and rustless from the time they come off the production line until the mechanic gets them. In the interim they must experience a shelf or storage life of unpredictable length—whether in the wholesaler's warehouse, the retailer's store or the consumer's tool room, during which time they must be constantly protected and always identified as to kind and size, pitch of thread and degree of precision in the finish. Obviously the job of packaging them is not a simple one.

Not long ago it occurred to some of the merchandising-minded members of this organization that it might be possible to improve their existing packages. The idea was approved by the officials of the company and the advertising manager and his assistant began a long course of development. Early in their thinking they formulated three objectives:

1. The new package must meet certain requirements of their own organization.
2. It must meet the needs of the distributors and dealers.
3. It must deliver the tools to the ultimate consumer not only in perfect condition, but also in a convenient manner.

The new packaging program begins with their big family of taps and the work in this department has established a pattern that gives every promise of being extended to the entire line. Taps, it will be remembered, are precision thread-cutting tools with a plain shank that takes up about half of their length, the other half having from two to four threaded "lands" (the high spaces between grooves) each containing numerous sharp cutting edges. These cutting surfaces must be fully protected against other hard objects and also against the possibility of two taps coming in contact with each other.

From the standpoint of their own company requirements, they listed the following points: The package must be easy to load by hand, because the product is not suitable for machine loading. It must conform to their standards of protection for the tools. It must be at a price which the value or sales price of the contents can "carry." It should provide for accurate identity of the contents and it should have an attractive appearance that would give it sales appeal.

The requirements of the distributors and dealers present a more complicated problem. The distributor usually purchases his supply of taps in standard packages—that is, by the dozen—but normally resells a large proportion of them in broken lots.

Accurate identity is also important to the dealer, but of prime importance to him is a method of disclosing the number of taps remaining in a broken package, and in the past various expedients had been tried. Other considerations of importance to the distributor are the strength and durability of the package, convenience in handling and standardization of package size and style for purposes of ordering, storage and resale.

2

3

2 and 3—The wooden tray and metal-edge construction of the old package was proved so satisfactory and sturdy that it was retained in the new. For the larger sizes of taps, the redesigned packages afford much easier identity.

Their ultimate consumers consist of buyers of small quantities or even single taps on the one hand and wholesale users like large manufacturers on the other. Greenfield's package planners decided that if the package met the needs of the wholesale users, it would come reasonably close to taking care of the buyers of single units.

The large consumers of taps have some of the same problems as the distributors, since normally they buy full packages. But in addition, some of the large manufacturers—probably most of them—have their own methods of storing tools. Some of them, Greenfield discovered, keep the tools in the original boxes except when in use, while others unpack them on receipt, put them in their own storage receptacles and throw away the package. Some large consumers desire a package which permits of easy inspection and replacement of the taps after use; and most of them subject cutting tools to a rigid inspection immediately on receipt, after which they are replaced in the original carton and passed along to the tool storage department.

After determining these three sets of specific requirements, the next step was to analyze the old method of packaging to see in how many ways it met them and in what ways it failed. Like most companies when they explored existing package procedures, they made some interesting discoveries.

In the past, they had packed taps in a variety of ways corresponding roughly to their relative value. A characteristic common to all their packages was that tools were protected from damage in one of two ways: the lower-priced types were individually wrapped in waxed paper; the higher-priced tools were packed in grooved wooden trays. These methods, apparently, met their own needs from the standpoints of packaging line operations and cost considerations, but they left something to be desired from the viewpoint of appearance and convenience. Their distributors, they found, considered some of the packages so small and inconvenient in shape that they resulted in losses and damage because of storage problems; the labeling, dealers commented, was unsatisfactory both as to design and legibility of information.

From the consumer's point of view, it was found that the individually wrapped taps were not satisfactory, although the packages with the grooved trays which permitted individual separation of the unwrapped tools met the user's needs. On the larger packages, too, the labeling system was fairly satisfactory; on the smaller packages, however, the amount of detailed information required made the labels practically illegible.

At this point an important discovery was made: In the past, the Greenfield organization had always regarded the label as a problem separate and distinct from the container. Their stock maintenance department took care of the label problem and the shipping department handled package problems, both being subject to direction of the sales department. But now, as a result of some careful study of what the real scope of packaging is, they have merged these two problems into one and placed it under the direction of the advertising department, to be handled in cooperation with the stock maintenance department.

With their comparative list of the advantages and disadvantages of their old packages before them, they launched into the task of designing a new package which would do three things: (1) retain the good features of the old method; (2) eliminate the disadvantages; and (3) add certain new ideas developed from their study of the problem in its entirety.

External redesign was a comparatively simple part of the job. Most of the old packages were of uncoated paperboard, printed with an all-over design pattern featuring company name, address and their GTD trademark. All of these had a dull red background, regardless of the type or style of the contents. The very small taps were packaged in envelopes.

Structurally, as far as the larger taps were concerned, one type of box used formerly was found to be entirely satisfactory from the standpoint of all the tests applied. This was forthwith adopted for the larger sizes, regardless of their unit price. This was a metal-edge box with a grooved wood tray.

But one of their most troublesome problems arose from the fact that distributor and consumer alike have always had difficulty in identifying accurately different classes of taps of the same type. These tools are divided into four classes, distinguished not by varying grades of quality, but by varying degrees of precision in their finish. Thread cutting requires

these varying degrees of precision because of the different nature of the jobs performed; for instance, replacing a broken stud—by hand—in an automobile calls for a different tool from the one needed for mass production of airplane engine parts, the latter of course needing a tap finished to a remarkable degree of precision. Although all taps are stamped with a variety of identifying features, such as size and thread standard, some of them are no larger than an ordinary match stick; and the identification of the different types is a difficult matter, especially for sales clerks who are not well versed in their different uses.

A simple solution was found for this somewhat involved problem by resorting to different colors for the exterior of the boxes, to designate the four different degrees of precision. To some extent, this device had been in use—on the labels only—of the old packages; but unfortunately the colors were not readily distinguishable as used against the red background of the boxes, and two labels in particular gave trouble—a red and an orange were frequently mistaken for each other. In point of size and style of type used, too, the old labels left something to be desired.

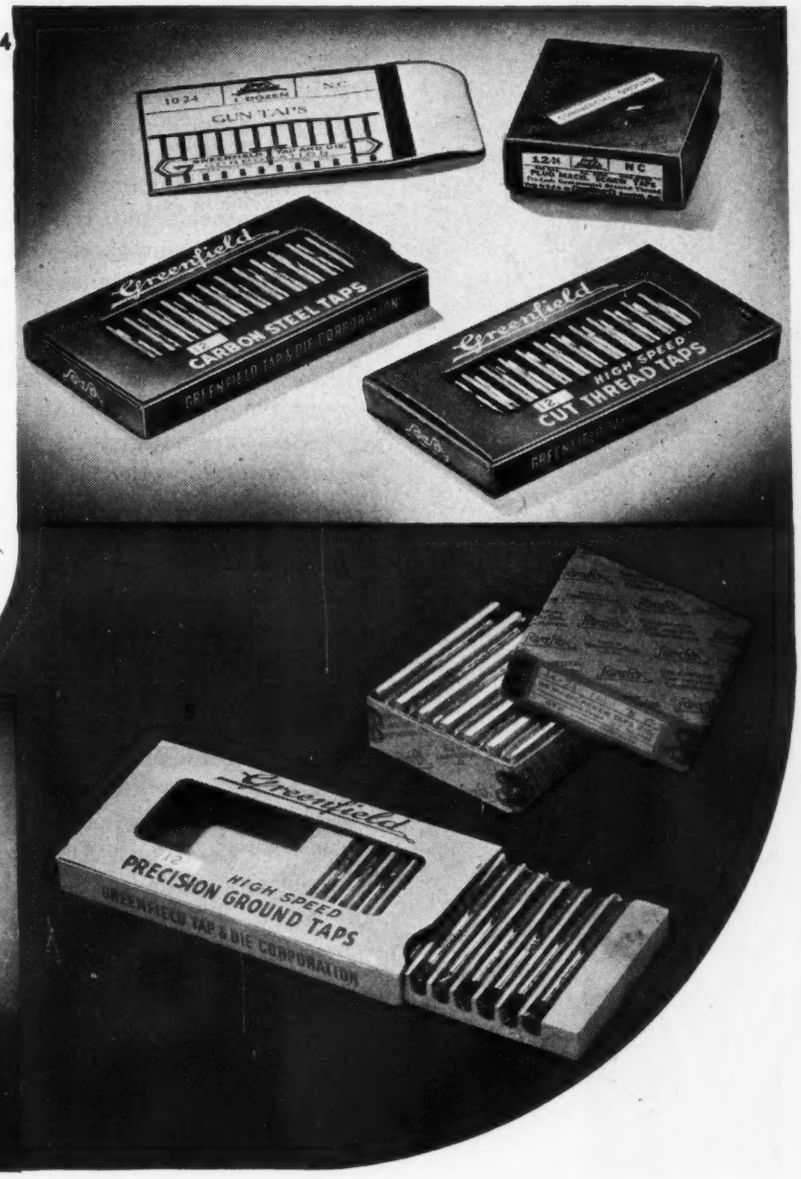
On the new packages, then, instead of all the cartons having the same color, it was decided to make them in four different colors, those colors roughly corresponding to the colors previously used on the labels—green for carbon steel; red for high speed cut thread, blue for high speed commercial ground and yellow for high speed precision ground. The first three are produced in one color, the lettering showing through in white. But white would not show up properly, especially in artificial light, against the yellow; hence black was called for. At one time they had almost settled on gray as the fourth color, which would have permitted using one-color printing in all cases. However, in testing visibility and legibility under all kinds of lighting conditions, it was found that two out of three people were unable easily to distinguish blue from the gray.

Gloss finish on coated board was adopted for these cartons because the packages are often handled with greasy hands; and a gloss finish will not only resist grease but also retain its snappy appearance much longer than the unfinished board. The top panel carries in bold, attractive and easily legible form merely the famous GTD trademark and the words "Greenfield taps."

The redesign of the labels called first for an analysis of the old ones, on which the information fell into three groups:

1. Company or trade identification and legal requirements.
2. Type of merchandise, degree of precision, etc.
3. Size, class, catalog number and quantity.

The first group consisted of (*Continued on page 190*)



4—New visibility packages adopted for smaller-sized taps (foreground) contrast favorably in appearance and convenience with the old (above). 5—Cellophane window in new package for small taps permits quick stock-taking without handling the tools. Wooden tray slides out to permit convenient removal and replacement of taps. The old package (background) did not have these advantages. 6—Front label on the new package (below) is less crowded than its predecessor. Only copy material for exact and quick identity remains.

The All America

Not long after Victory Day people in the packaging field began asking "Now—what about the All-America Package Competition?"

We tried not to look at the matter merely from our own point of view. Our first impulse was to announce a Competition immediately, for we knew that the reasons for suspending it were dissolved by the surrender of Japan. Military secrecy would no longer curtain important activity; no longer would designers be hidden behind drawing boards shielding future releases; no longer would it be necessary to hoard manpower and materials; no longer need we hesitate to sponsor a Competition because it might interfere with the war effort.

But it would be oversimplification to suppose that the removal of these inhibitions point to an unqualified "Yes." The decision hinges on a great many things. After all, this Competition—because it has become an institution—belongs to the industry. Why not let the industry decide?

So we took a sample referendum. Knowing that people are pretty well "fed up" with questionnaires, we didn't write to our entire subscription list, but to a representative list that we were quite sure would respond with utter frankness. The list included manufacturers, designers and users of all kinds of packages and equipment in many different fields, as well as several judges of previous All-America competitions.

The responses surprised us. Not only did they give evidence of the keenest interest in the Competition, but some of the writers talked to us "like Dutch Uncles." They assumed—quite properly—a sort of proprietary interest in the event. They voted three to one against holding a Competition now, and they supported their votes with reasons which we think you ought to know.

Those in favor of an All-America now—about a fourth of the entire list—made some points that cannot be lightly dismissed. The restrictions that have fettered packaging activity are being removed, they said, more promptly than any of us anticipated. A Competition would encourage everybody to move as fast as possible toward increased efficiency and reduced costs. We ought to get back to a normal basis with the greatest possible dispatch, they argued, and that would include running an All-America Competition. There might be those on the brink of launching new packages who would be excluded, but that would always be the case; and they could enter the next one. Besides, wouldn't it be significant, as well as interesting historically, to report that there were no entries in some

. . . a competition for 1946

of the classifications? The Competition would focus public attention on packaging NOW—why hesitate even though the field was not entirely ready? If it were deferred, it would be a year and a half before the next awards were presented—and that, they said, is too long to wait!

These are powerful arguments, but three times as many negative voters overwhelmed them with cogent reasons to the contrary. The abrupt ending of the war finds everybody confused as to future planning, with little inclination or opportunity to devote proper attention to the All-America Package Competition. Although restrictions are being lifted rapidly, the actual supply situation is still not normal. A competition now would reflect for the most part simply ingenuity in using substitute materials and therefore would not present a true or fair picture of packaging activity. Partial activity would be a definite let-down, and the industry would be shown up in a better light when not hampered by shortages. It takes a long time to develop and launch new packages even under normal conditions and today comparatively few people have approached normal. Package fabricators and machinery makers are booked up solid for a long period ahead and they hesitate about making delivery promises. A Competition would be more effective after a year of normal activity. Packages of substitute materials are interesting historically, but they won't all remain when former materials are again available. A Competition now would be unfair to those who haven't been thinking about their own packages as much as they have about concentrating on the war effort. Later, the "bugs" that have occurred during the reconversion period could be eliminated and the entries would manifest real packaging progress. If the Competition were deferred a year, the new developments under way now would insure a vastly more successful contest then.

Well, with a mandate like that, there is only one thing to do. The All-America will be deferred a year. From what these letters told us of package plans that are now going forward, the next Competition promises to top all preceding ones. There *will* be an All-America for the year 1946. Entries will close in December 1946, and awards will be announced in the spring of 1947. Take due notice thereof and be governed accordingly!

EDITOR-IN-CHIEF

Canned Fire Power... ready if war comes again

1—A 90-mm. gun in balanced pressure barrier of aluminum, ready for transport to long-time storage area. Wheels will be removed and stowed inside through access door; all openings will then be sealed and, through perpetually reactivating silica gel breather (on roof), gun will remain in dehydrated atmosphere ready for use.

Many of the weapons for American fighting forces in the next war—just in case the atomic bomb and the United Nations Charter do not achieve their expected goal of permanent peace—will be packaged ready to be opened for immediate use the moment hostilities appear imminent. The Army Ordnance Department is having initial lots of the new-type containers produced.

Jet-propelled, robot-guided atomic bombs may well be expected to be the major weapon of any global conflict, but the consensus of military opinion is that this alone will not be enough to bring an enemy to his knees. No nation with thoughts of aggression will ever again concentrate its industries in a handful of major cities which could be blown to eternity in a matter of seconds. The industries and the defenses of the would-be aggressor will be constructed where atomic bombs cannot get at them and it will be necessary for ground troops (airborne, of course) to rout the enemy out of his protective nest. And that's where "canned" weapons will enter the picture.

The Ordnance Department has developed a new "canning" method for the long-term storage of field artillery and other ordnance items. In perfecting this program, Ordnance has taken into consideration the psychological effect of ready-to-use fire power which the United States could hold over the heads of would-be attackers. It has also considered the safeguarding of the huge taxpayer investment in current combat equipment, as well as reduction of the taxpayer's maintenance costs in the postwar era.

With the conclusion of this war, there are more than 750,000 pieces of artillery, hundreds of thousands of small arms, artillery fire-control equipment, tank and automotive spare parts, electrical equipment and other Ordnance items that need long term attention.

After World War I, we had only a meager 9,000 pieces of artillery to store, and these were for the most part 3-in. rifles—pea shooters when compared to present-day field artillery. Nevertheless, storage and maintenance costs for Ordnance equipment between World War I and World War II were so heavy that only a very small amount of money was left from the peacetime military budget for research and development.

Weapons stored under ordinary conditions require frequent inspection and maintenance to keep them in operating condition. Warehouses are needed—manpower, oil, lubricants and paint. In order for Ordnance to cut storage and maintenance costs and thus devote more money to scientific research, the cost of maintenance of stored material must be drastically reduced.

The cost of this new "canning" process for artillery will be only 5% of the cost of the artillery itself. This is less than the cost of one maintenance overhaul. Heavy annual maintenance cost will be practically eliminated. The packaged matériel can be stored in the open in any part of the world. Storage costs will be practically eliminated. There will be no need for large warehouses.

The Army has at last found a practical answer to the problem that has plagued military men through the years. It is using the basic Method II dehydrated packaging technique; namely, a metal moisture-vaporproof barrier with a desiccant, plus other engineering advances. Ordnance matériel ranging

* Manager of Field Service Engineers, Davison Chemical Corp., Baltimore Md.

from large field pieces to small intricate artillery fire-control instruments may be packaged and kept free from deterioration caused by rust, mildew, corrosion, or mold. These items will remain protected for from 10 to 25 or even 50 years—and the tremendous strategic advantage in this new metal canning method is that the item will be ready for immediate use, factory-fresh, with factory-adjustments unchanged, in the same condition that it left the production line at time of storage.

The idea of packaging armament in moisture-free containers antedated this war by many years. It was a young Ordnance officer, as chief of the Rock Island (Ill.) Arsenal, who conceived the idea of sealing guns in metal cans and thus removing them from the corrosive destructiveness of moisture-laden air. He was constantly harassed by the expensive and troublesome annual maintenance of the guns for which he was responsible. Weapons stored under normal conditions required an annual inspection to keep them in top operating condition, this cost ranging from $1,000 to $5,000 for a major piece of artillery. He was impressed with the fact that about 10% of the arsenal's budget was being spent on degreasing and regreasing stored equipment. He determined to do something about it. Although money for experiments was scarce, he found enough to "can" a number of 75 mm. recoil mechanisms. The leather packing and gaskets were removed and the mechanisms were placed in drums containing oil. They were then hermetically sealed. Nearly 20 years later, the cans were opened and the metal parts were found to be in perfect condition. They were shipped to England at the beginning of World War II and helped re-arm that country.

That young officer was Capt. Levin H. Campbell, Jr., who is today Lt. Gen. Campbell, Chief of Army Ordnance.

Storage in oil was all right for certain kinds of materials, but for others—such as 90 mm. anti-aircraft weapons, fire-control instruments and electrical equipment—it was not suitable. The range of materials used by the Armed Forces extends from simple springs to the most complicated electrical, mechanical and optical instruments, computors and accessories. Some of them may consist of one or more combinations of ferrous and non-ferrous metals, rubber, leather, canvas, wood and plastics. Because of their nature, some of these varied materials must be stored together; containers and a packaging method had to be developed that would permit storage of this equipment without the use of oils, greases and compounds.

Early this spring, Gen. Campbell and members of his staff were returning on a plane from Chicago. The problem of the preservation of Ordnance material was discussed and the advantage of an inert gas with silica gel as the dehydrating agent in the metal container in place of oil was pointed out. The purpose of the desiccant was to take up the invisible film of moisture on the inside walls of the container and on the surface of the material being stored. Gen. Campbell thought well of the suggestion and assigned the problem for detailed investigation.

The Industry-and-Ordnance team functioned in high gear. Universities were consulted, scientists were assigned to the problem, the experience of Ordnance packaging experts was pooled. The American Bridge Co. took over the development of a large steel container for field artillery pieces. The Aluminum Co. of America and The Glenn L. Martin Co. developed a light aluminum "balanced pressure barrier" for field artillery and anti-aircraft guns. The Arsenals worked on the smaller packages. The Davison Chemical Corp., manufacturers of the desiccant silica gel, worked with all and handled the problem of static dehumidification.

Three methods for artillery pieces

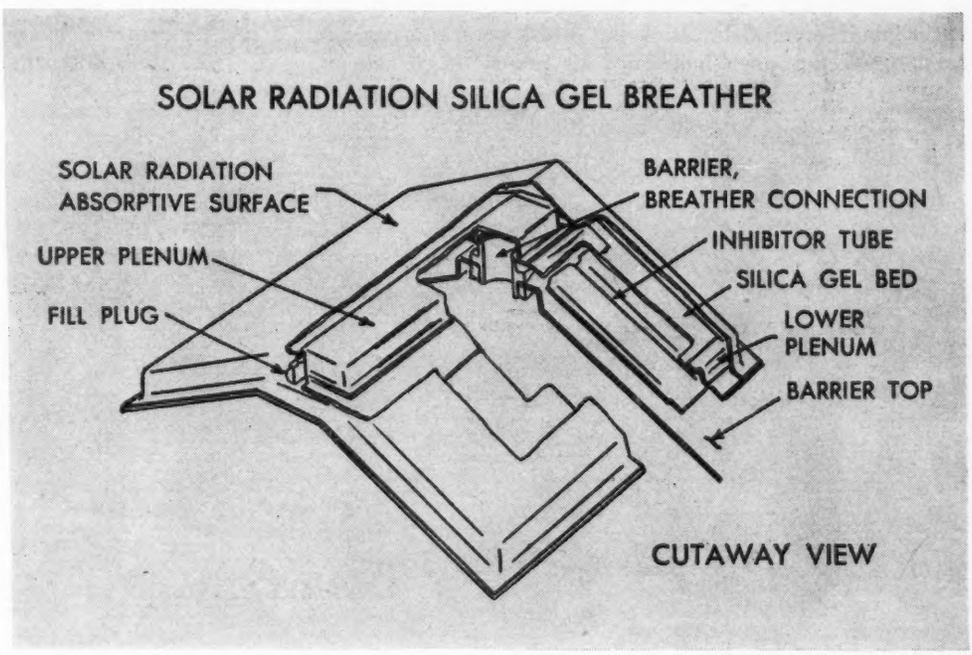
In the "canning" of cannon, three methods have been developed:

1. The balanced pressure barrier of aluminum construction (Fig. 1).
2. The Quonset hut-type steel can (Fig. 5).
3. The spraying of the weapon with a plastic resin which forms a tight-fitting envelope, encasing the gun in a flexible moisture-vapor barrier.

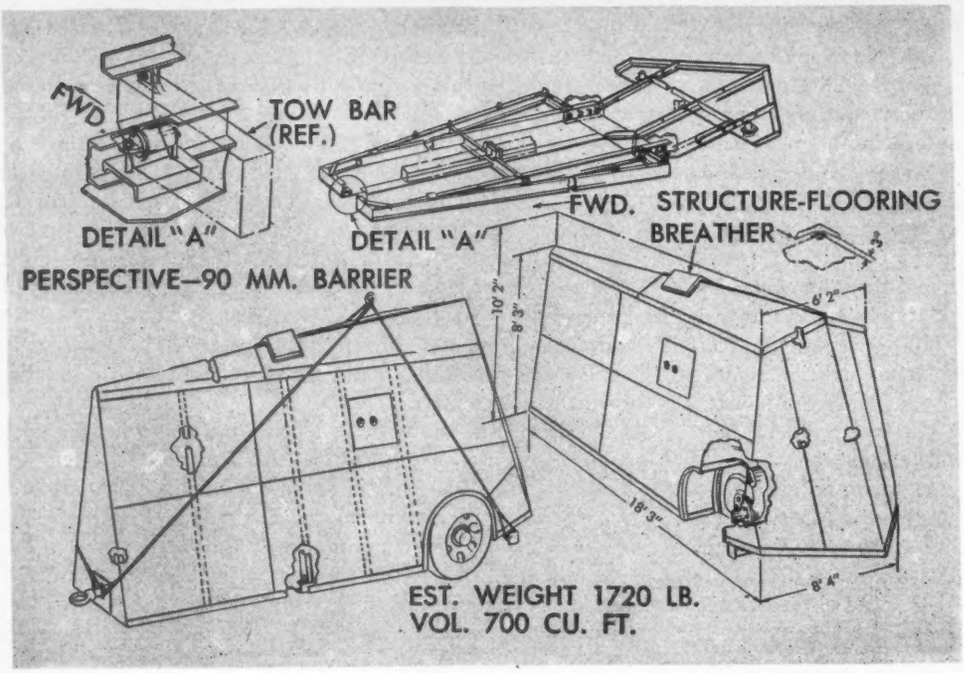
All three methods have shown impressive results and Ordnance officers are enthusiastic about their possibilities.

In designing the ideal barrier, various requirements for long time preservation had to be met. After careful study, design considerations were set up as follows:

2



2—Cutaway sketch shows components of the breather. Silica gel is reactivated by solar heat drawing air and dampness from the package.



3

3—Construction details of mobile barrier for 90-mm. gun. 4—Many types and sizes of metal drums and cans are used for storage packing of smaller Ordnance items. Same type of desiccant packaging was used during war.

1. Minimum weight
2. Strength
3. Ruggedness
4. Unimpaired mobility
5. Minimum space requirements
6. Long life
7. Minimum moisture penetration
8. Minimum operating costs
9. Minimum maintenance costs
10. Minimum over-all life costs
11. National resources and economy

One of the major problems in these requirements is weight, since so many of the design requirements—such as basic cost, strength, mobility, ease of handling and low operating and maintenance costs—are in general dependent upon it.

The balanced pressure barrier of aluminum construction solves this through the use of an unusual principle, which makes it unnecessary to design for pressure differentials.

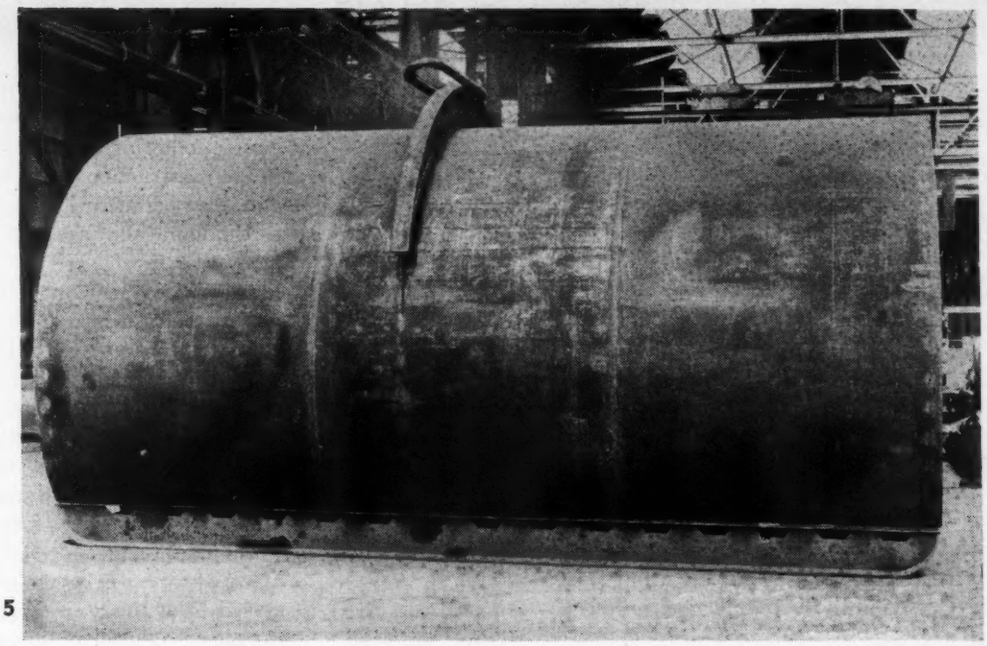
The balanced pressure barrier derives its name from the principle incorporated in its design which permits expansion and contraction of de-humidified air caused by changes of temperature or barometric pressure, in an enclosed space Throughout this "breathing" process a relative humidity of less than 30% is maintained, thus preventing rust and corrosion. This is accomplished by the use of a solar radiation silica gel breather apparatus (Fig. 2) developed by Davison.

The breathing principle

The air in any enclosure has a varying density when subjected to ambient temperature and pressure conditions such as are encountered in the storage of packages exposed to the elements. In the case of hermetically sealed enclosures, the variations of density will cause a varying pressure inside the enclosure which is independent of the atmospheric pressure but is proportional to the absolute temperature. If the enclosure is vented, however, a cyclic flow of air into and out of the enclosure will occur due to increments of pressure differential between the enclosed space and the atmosphere. This cyclic flow is termed breathing and its magnitude and rate depend on the range and rate of atmospheric pressure and temperature change.

If it is desired to maintain the air within a vented enclosure

4



5—*Steel "can" on skids, built on Quonset principle, also is used on long-term storage of 90-mm. anti-aircraft gun. In this case nitrogen displaces air in can and silica gel takes up any residual moisture. Note fittings for hoisting.*

5

at a low relative humidity, some device must be employed to dry the air which is breathed in. Such a device is the new breather,* which has been designed to dry the air breathed into an enclosure under any conceivable natural storage condition. Salient features of the breather are:

a. To dry the air breathed in, silica gel is employed. Silica gel is an inert and durable form of silicon dioxide which has an infinite number of small-diameter capillaries and an enormous internal surface, estimated to be about 50,000 sq. ft. per cubic in. The moisture in air drawn through silica gel is attracted by and condensed to liquid in the capillaries. The action of silica gel in adsorbing moisture is purely physical and there is no change in the size and shape of the particles as they become saturated. No corrosive or injurious compounds are given off and even when saturated the particles of silica gel feel and appear perfectly dry. After use, silica gel containing water may be regenerated by subjecting it to an elevated temperature, which operation is known as activation. The processes of adsorption and activation are completely reversible, so it is possible to use silica gel for an unlimited number of times without loss in efficiency or capacity. Each breather contains 10 lbs. of silica gel and the moisture-laden air must pass through a bed of silica gel 10 in. deep on its way into an enclosure.

b. Solar radiation is utilized for activation. The exposed surfaces of the breather are finished in a dull black, which has a high thermal absorbtivity; thus the solar radiation incident on the surfaces will produce a relatively high surface temperature. The silica gel bed normal to the solar rays is only one inch thick and aluminum, of which the breather is constructed, has high thermal conductivity; therefore the silica gel itself will be heated rapidly. At the same time, the air within the enclosure is being heated, which causes it to expand and a flow of dry air out through the breather to result. The water in the silica gel is driven from the capillaries and is picked up and swept out of the breather by the flow of warm dry air from the enclosure, thus activating the silica gel and preparing it for the next breathing operation.

c. Normally the silica gel in a container such as a breather, with an opening to the atomosphere, will adsorb moisture by infiltration from the surrounding air even when there is no flow of air. However, it has been found by experiment and practice that if the air passage to the atmosphere has a length equal to or greater than ten times the diameter of the passage, such infiltration is minimized to a negligible degree. This principle is applied in the moisture-vapor-transmission inhibitor, which is an integral feature of the breather.

d. The physical shape of the Davison breather is like that of an open, inverted book. This design provides a top surface most likely to shed rain and snow. The inlet ports to the MVT inhibitor are located at the apex on the under side where they are protected from entry of wind-borne particles of rain, snow and dust.

In practice there are three operating conditions under which a breather must function—namely, "breathing out," "static condition" and "breathing in."

The first-named condition occurs when the air inside the

6—*Vacuum cans, some key opening, also are used for storage of delicate instruments. Cutaway cans show principle of sealing, dehydrating, cushioning. Items thus packaged will remain in perfect condition for many years.*

6

* Davison Solar Radiation Silica Gel Breather. Patent applied for.

enclosure is heated by any means whatsoever and also whenever the atmospheric pressure falls. This condition will be created most often when the enlosure is exposed to the sun's rays. As pointed out above, the breather under this condition will heat up and drive out the moisture previously adsorbed and prepare it for the next "breathing in" operation.

The "static condition" exists whenever there is no change in temperature or pressure and therefore no flow of air into or out of the enclosure. The MVT inhibitor incorporated in the breather then functions to prevent depletion of the silica gel.

The final operating condition, "breathing in," is the reverse of the first condition and occurs whenever the enclosed air is cooled and whenever the atmospheric pressure rises. Under this condition the prime function of the breather comes into use. The air being forced into the enclosure by a pressure differential must pass through the silica gel bed and give up its contained moisture to the silica gel and then pass into the enclosure as dry air. The moisture given up is held in the silica gel, where it can do no damage, until exiting dry air picks it up on the next "breathing out" operation and discharges it to the atmosphere.

Material for the barrier

Aluminum was preferred as the material of construction for the barrier because it fulfilled most of the requirements.

7

Aluminum most successfully gives *minimum weight* to the barrier, while still giving the necessary *strength, ruggedness* and *long life*. Aluminum is easy to fabricate, shape and weld, thus allowing the minimum space requirements to be met by closely following the overall contour of the gun. Aluminum in the construction of the barrier adds no great weight to the gun, thus permitting *unimpaired mobility*.

Aluminum alloy sheet allows no measurable rate of *moisture-vapor transmission*. This feature, when combined with the silica gel breather, fulfills the primary design requirements of preventing rust and corrosion.

Aluminum sheet, in the thickness used and the self-draining shape of the barrier, eliminates the necessity for any type of finish on the top and sides. As a safety precaution, in case of probable contact with wet ground and weeds, the bottom is painted with one coat of zinc chromate primer and two coats of aluminum paint. Repainting every 15 years should be sufficient. This makes for *minimum maintenance*.

Aluminum appears to give a certainty of *minimum over-all life costs*. Since the preserved equipment must usually be moved from the location where it is prepared for long-time storage to its ultimate location, handling, trucking and shipment by railroad or steamship must be considered as part of the over-all life cost together with initial, operating and maintenance costs. Strategic considerations may dictate other long-distance movements and tactical dispersal may be necessary from time to time.

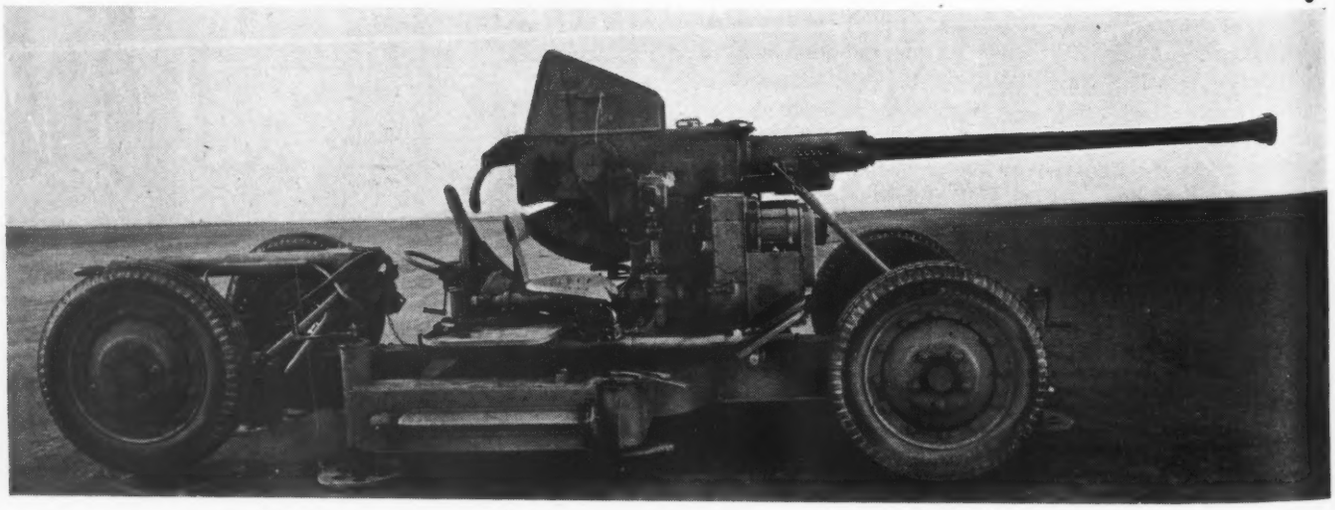
A typical shipment problem indicates the importance of minimum added weight, minimum added over-all dimensions and mobility for ease of handling. The design will allow two 90 mm. gun mount barriers to be loaded on a standard railway car. On a shipment from Baltimore to San Francisco, every additional 1,000 lbs. of weight per gun above the basic weight would cost approximately $75 per car.

Aluminum alloy was chosen as the material of construction after a study of *national resources and economy* for the following reasons:

a. Tremendous expansion of aluminum alloy production facilities for the large aircraft construction program, which is

***7**—Lt. Gen. L. N. Campbell, chief of Army Ordnance, fathered the idea of long-term dehydrated storage. He is shown examining one of the "Desicans," which are auxiliary silica gel containers to dehumidify the original atmosphere of the package.* **8**—*A 40-mm. gun prior to dismounting for packaging in a balanced pressure storage barrier.*

8



now being virtually halted, provides an abundant source of material.

b. In many countries of the world, the necessity for rebuilding factories, bridges, buildings, railroad facilities and equipment and other items will require heavy metals.

c. An added strain will be placed on the heavy metals industry of the United States, due to the destruction of similar industry in other countries.

d. The use of aluminum for this program will preserve a standing stockpile in case of some unforeseen contingency.

e. The use of aluminum will assist in maintaining the proper balance of manpower and facilities of an industry which would be vital in time of emergency.

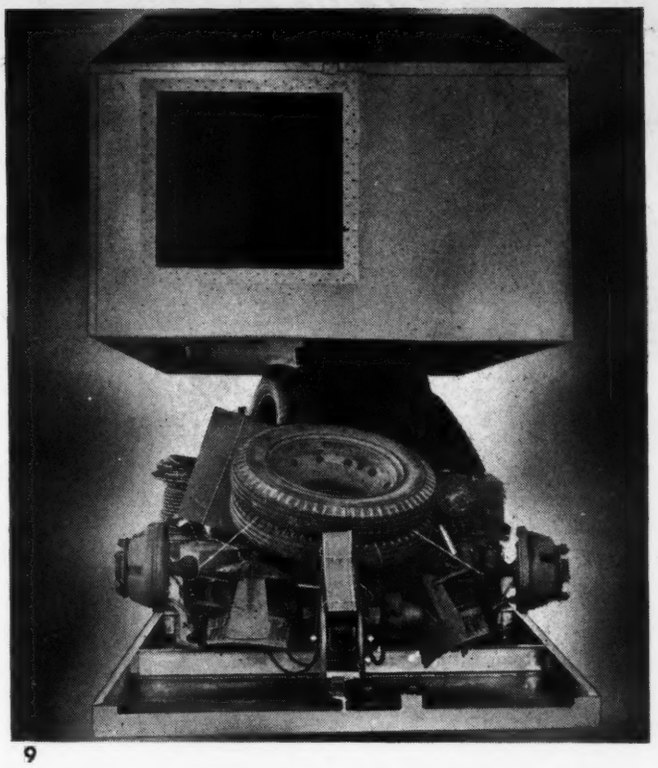
Construction of aluminum barriers

The aluminum barriers for the 40- and 90-mm. guns are similar in their basic construction.

Alloys 3 S and 52 S have been given preference. Wide sheets are used to minimize the amount of welding required. Strength is of extreme importance, although at the same time the thinnest possible sheets must be used. Corrugation and the mounting of the sheet on strong frames achieves these aims. The structural frames serve the added advantage of being supports from which to suspend the barrier from the gun.

The barriers are constructed of weldable aluminum alloys which have demonstrated their ability to withstand the deteriorating action of weather in all parts of the world, in many types of structural application and by countless specimen tests. Simple rugged structural shapes are used for frames to provide support for the external surfaces and to permit attachment to the gun mounts. All joints in the external sheet aluminum are completely sealed by welding, except for a manhole coverplate which is bolted in place to permit inspection of the interior.

To retain the unimpaired mobility of the heavier 90-mm. gun, the barrier is suspended from it. The feature of permitting the wheels to extend outside the barrier was obtained by fitting the wheel well of the barrier on the wheel studs. Rotating motion which would break this joint is prevented by blocking of the bogie mechanism. Wheels can be



9

9—Showing 40-mm. gun dismounted, with barrier cap about to be lowered. The access door will be applied later.

dismounted and placed in the barrier through an access door when the gun reaches its permanent location and axle openings can be sealed.

Due to the relatively light weight of the 40-mm. gun (approximately 5,500 lbs.), it was not considered necessary to retain mobility in this case. Therefore the barrier completely encloses the gun and mount and the wheels and gun barrel are disassembled for storage within the barrier.

Unit spares and tools, identified by metal tags with nomenclature and part number, are stored within the barrier.

All barrier parts attached (*Continued on page 186*)

10

10—Completing packaging of 40-mm. gun. All spare parts and tools necessary to put gun in action quickly are stowed in the package. Instruction card is visible through small observation window in access door (left).

Design Histories

Australian packaging

Australian package manufacturers may have been restricted in their use of color and packaging materials during the war years, but these restrictions have not hampered the imagination of their designs in any way. Both cartons and labels show an amazing ingenuity in using the materials at hand.

Most packages and labels have been restricted to the use of two colors only. In some cases it has been possible to use a tinted stock, thereby achieving the effect of three colors (for example, the "Coronet" label in the foreground). In this case red and blue are used on a cream-colored stock.

The "Captain Kidd" label achieves a four-color effect by the use of tints of red and black, which add gray and pink to the color scheme.

Navy-blue and brilliant red are cleverly combined on the "Lushus" mixed fruit carton to make an eye-appealing package. The script lettering of the trade name is reverse printed allowing the white of the paperboard to take the place of an extra color. The carton for "Summagold" parrot food is a four-color job but it is reproduced with exceptional brilliance on an ordinary paperboard stock.

It was found that the best choices, when restricted to two colors, have been the brilliant yellows and reds combined with black or some other dark color to give the package or label as much contrast as possible.

CREDIT: *Packages and labels, S. D. Townsend & Co., Sydney Australia.*

Soil tester

A folding carton with a shoulder construction holds an inset tray die-cut to fit the components of this soil-testing kit made by the American Soil Products Co., Inc., New York City, for the home gardener. The whole carton is covered with a sleeve which can be used as a table on which to conduct the tests.

On the inside of the hinged cover of the carton is pasted a chart printed with the colors achieved with soils of different reactions, for comparison.

The entire package is simply printed in two colors—red and green—with the decorative trim of vegetables and fruits reversed. In places the red and green are overprinted giving the effect of a three-color job.

The inset tray which holds the five pieces of the set is provided with tabs at each end to hold it firmly in place during shipment. The entire set consists of a small boat-shaped piece of acetate; a package of waxed-paper strips, two small wooden spoons and a bottle of the fluid used in the tests.

The user is advised to fit a piece of the paper into the boat, sprinkle a small amount of the soil to be tested into the paper, and shake four to six drops of the liquid on it. After the color of the liquid has remained constant for at least thirty seconds it is compared to the samples shown on the flap of the carton. The soil is then identified by its pH degree and a booklet, which comes along with the set, names the plants best suited for that particular type of soil.

CREDIT: *Kit by Brooks & Porter Inc., New York City.*

Coffee frozen in cups

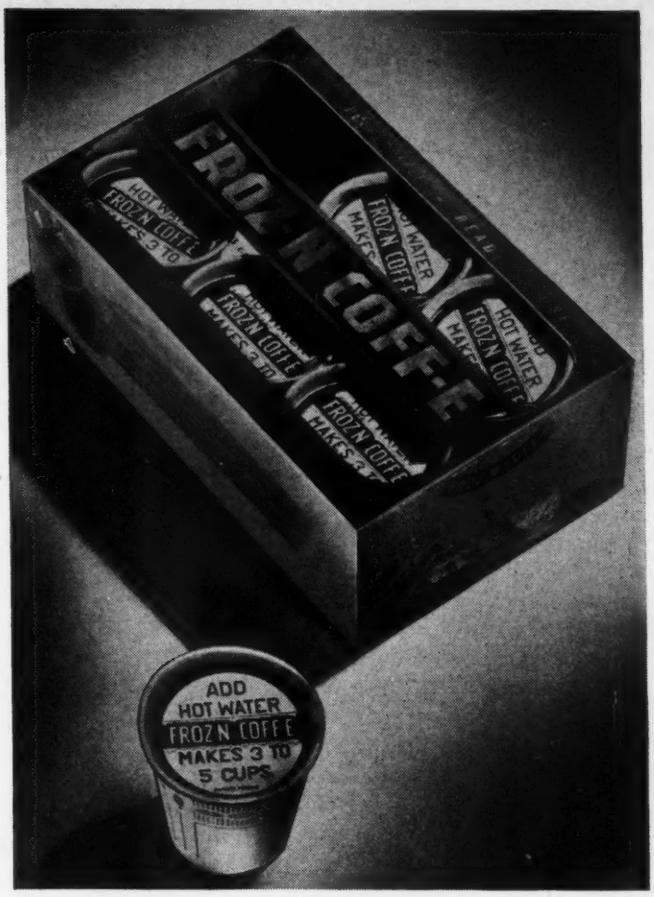
Froz-n Coff-e is a new, concentrated, prepared coffee frozen right in individual cups by Cusak Coffee Co., Los Angeles. The green coffee is imported from Central America, Columbia and Brazil. In this new process the coffee is roasted, ground, extracted, processed, packaged and frozen all within one hour's time. In preparation, all insolubles are filtered out without affecting the strength of the coffee—only the solubles in which the flavor is found remains. The essence is then put into the cups in premeasured amounts, capped and frozen at well below zero temperatures.

Six of the small paper cups are packed into a folding carton and overwrapped with a printed cellophane cover. The folding carton is die-cut from a single piece of waxed paperboard in such a way that two of the side flaps fold in. These flaps in turn are die-cut with three openings each into which the cups are fitted.

The cellophane is printed in a brilliant red with gold and coffee-brown for contrast. The face of the carton is simply printed with a band for brand identity—the rest left blank for visibility.

On the side panel which carries directions, the makers stress the fact that this product, unlike other frozen foods, can be refrozen. In fact they emphasize that, allowed to stand for any length of time thawed, the coffee will lose its fine, fresh flavor. Each cup will make from three to five cups of hot coffee, according to taste, but even the full contents of each cup need not be used each time. The user can make as little as one cup of coffee, recap the small package and return it to the ice cube compartment for future use.

CREDIT: *Package, Shellmar Products Co., Mount Vernon, Ohio. Paper Cups, Dixie Cup Co., Los Angeles, Calif.*



Flap coupon gets results

The J. W. Speaker Corp., Milwaukee, Wis., makers of "Match Patch" tire repair materials, has started a nation-wide Speaker Dealer Club for tire repair men who use these products. Members receive a colorful decalcomania identifying their stores as users of Speaker products along with other helpful selling aids. Each carton used to package the repair materials has one flap printed with a mailing coupon so that dealers may enroll with the least possible trouble.

It has been found that dealers will reply on a flap of this sort sooner than they will write a letter or mail a postal card. Also, it was found that an enclosed blank often made for production difficulties in packaging while, with this flap printed in advance, there is no stoppage on the lines.

CREDIT: *Printing, Wisconsin Cuneo Press, Milwaukee, Wis.*

Design Histories

Closure appeal . . . contour and color at low cost

A new type of threaded metal closure was developed and perfected just before the war as a bid for a sizable share of the cosmetic closure business. Presenting a perfectly smooth exterior surface on both top and side, this closure was frankly intended to simulate the appearance of the most expensive plastic cap, with the mechanical and cost advantages of metal. Indeed, because of its unusual construction, it was believed that the cap would have certain mechanical superiorities over the conventional metal closure.

It was realized that price, while not the only consideration, would be a powerful sales factor if the new closure, with its attractive appearance, could be sold at a price under the list for plastic and double-shell caps such as were being used by most cosmetic manufacturers. In practice, this theory worked out and the closure now occupies a price range which is about midway between the single-shell metal cap and the molded plastic cap.

Introduction and promotion were just getting under way when war struck. The drastic metal restrictions effective early in 1942 killed many another budding packaging development, but fortunately for these manufacturers it was found that the two-piece closure could be made quite satisfactorily from metal scrap. Accordingly, it has been possible to market this cap in fair quantities throughout the war and a wide range of experience on cosmetics has been obtained.

Now that all restrictions have been removed from metal closures other than tinplate, it is expected that the new cap will find even wider usage wherever an appearance of luxury quality, together with economy, must be considered. Production facilities are being expanded.

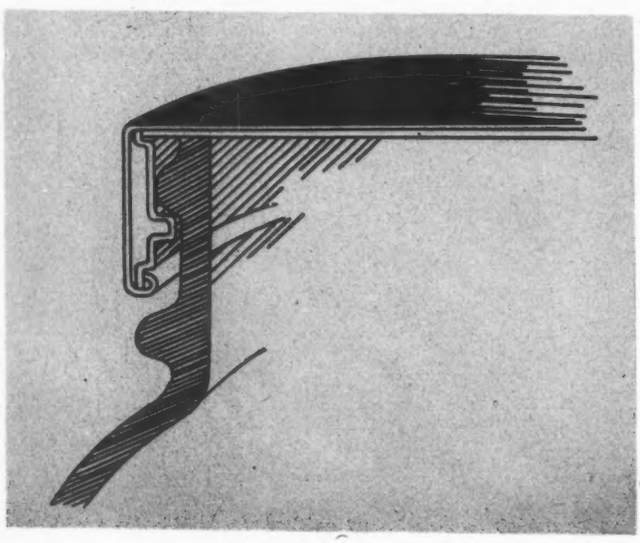
The unique feature of this closure is that the thread is separately formed and inserted into the shell. It does not have to be drawn or stretched. This made possible the use of scrap metal and contributes to the economy of manufacture. It is also responsible for the smooth exterior contour of the shell.

The closure shell is made as a single metal sheet which, when formed, encloses and holds in place a liner and the separate metal thread. Fig. 1 illustrates this novel construction. The shell prior to fabrication is enameled or lithographed to conform to the color and style of jar for which it is intended. A suitable liner is inserted in the shell and the thread, stamped from a non-corrosive strip of coated metal, is formed into a ring and assembled into the shell, locking the liner firmly in place. Then the lower edge of the shell is rolled or curled inward, locking the metal thread in place.

This construction has certain mechanical advantages. The top ledge of the thread is flat and engages the under side of the glass thread, as shown in Fig. 2, allowing the liner to seat itself evenly on the container finish and preventing the wedging condition commonly experienced with conventional screw caps.

1—Shell of closure is formed from single sheet of metal; liner and stamped strip which forms threads are inserted and locked into place by curling lower edge of shell inward, as shown. 2—Top ledge of thread is flat and engages under side of glass thread evenly, without wedging. 3—Trade mark may be applied to both top and side of closure during lithographing if desired; in background, closure interior.

1



2

3

4

4—Coated or lithographed in any shade desired, with a varnish surface, the smooth, glistening caps closely simulate molded plastic. The color coating is tough, not readily chipped. Photo indicates a few of cosmetic brands using the new cap. With increased supply, it is expected to go into other fields.

Because of this construction, the caps rotate freely when applied to a jar, thus saving time on the production line. They seal air-tight and liquid-tight, yet are easy to remove because of the lack of a wedging action. The latter is considered to be an important point of consumer convenience.

Liners can, of course, be of any material or coating, suitable to the product to be contained. One advantage is that the liner is firmly and permanently held in place by the construction of the cap, no adhesive being required.

Since color is applied, the choice of color is unlimited—a feature which is not true of most plastics. The delicate pastels characteristic of plastic cosmetic closures are readily reproduced. There are, for instance, 27 shades of pink and 11 shades of black used in the cosmetic field and the users are insistent that these shades be matched exactly. With the use of highest quality lithographic inks and surface coatings of special varnish, these exacting demands have been met.

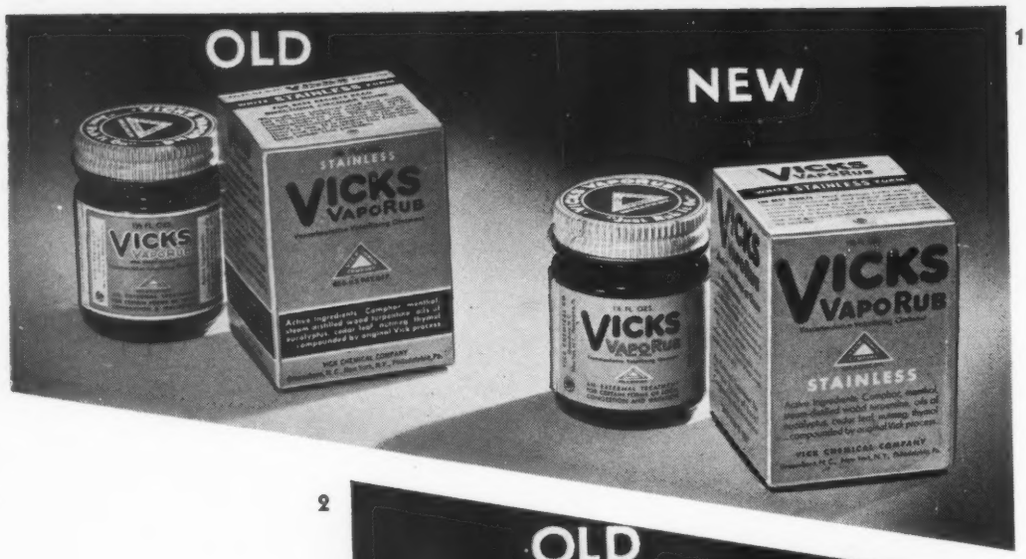
The tough varnish gives the cap a hard finish with a high luster and at the same time protects it against chipping or scratching. In both appearance and feel, a cap thus finished is remarkably similar to the familiar glossy molded plastic.

In the lithographing process, trade mark and label information also can be applied. Decoration frequently is added to the side surface of the cap—a feature which is difficult to achieve with other types of threaded closures.

Frequently also the inside thread ring is finished in a contrasting color, which gives an additional decorative note. In the case of one cosmetic closure which is finished in a pastel blue on the outside, the liner is white and the thread ring a delicate pink. At present the closure is being made in a number of standard sizes ranging from 48 to 89 mm.

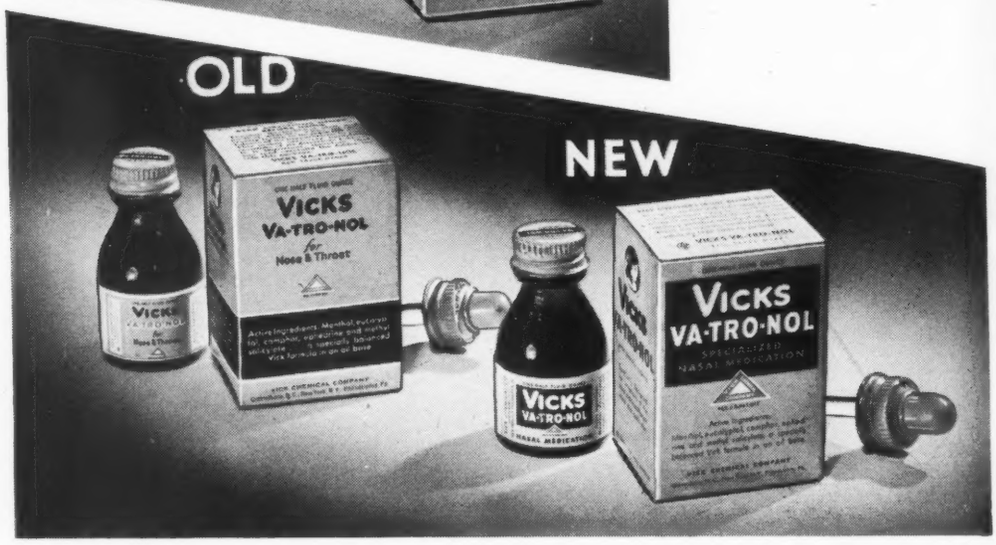
Of course, the real test of this closure will come when cosmetic makers again have their choice of all types of caps and materials, but the manufacturer is confident that the advantages of appearance and construction at an economical price—already demonstrated—will win for it a permanent place not only in cosmetics but in other fields where package appearance is highly valued.

CREDIT: *Closures by Crown Cork Specialty Corp., Decatur, Ill.*



1

1—*Blue panel has been eliminated from old Vick's VapoRub package and trade name strengthened. The same treatment has been given to the jar label.*



2

2—*Blue background panel was added to Va-Tro-Nol to differentiate it from VapoRub but the family color scheme is retained.*

Design subtleties *that increase display value*

The public may not notice it. Dealers may not even notice it—so subtle is the redesign of Vick Chemical Co.'s packages now on the market.

The changes are principally a clean-up and modernization job to increase display value at the point of sale without sacrificing in any way the identity of these famous, 40-year-old robin's egg and bronze-blue packages with red trademark, more than 94,000,000 of which are now sold annually.

Plans for the change were made about a year ago, but the new packages for the whole line are being introduced this season for the first time.

Significant is the infinite attention to detail that is given by a company the size of Vick in working out eye-appeal factors to perfection. One of the leading designers was employed to work out the revisions and every step was weighed carefully by every department of the company concerned.

The changes represent modifications in the physical appearance of all four of the Vicks packages: Vicks VapoRub (two sizes and two forms) Vicks Va-tro-nol (two sizes), Vicks Medicated Cough Drops and Vicks Inhaler.

Principal changes on all the packages was a lightening up of the robin's-egg blue for higher visibility and contrast, the elimination of the dark blue panel added to the packages in 1939 to carry the informative data required by the Food and Drug Administration. The same data are now printed in dark blue on the light blue background which gives the packages a cleaner, more modern appearance. Sans serif type has been adopted for printing on all the packages. This was done because of its good legibility in very small sizes, whereas serif type in small sizes often fills up in the printing of large runs.

Visibility of the Vicks logotype has been strengthened by enlargement on front and back panels of the VapoRub package as well as on the side panels. The elimination of the dark blue banding and the printing of the informative data on the light blue also gives the whole carton stronger visibility. The white VapoRub is distinguished from the amber by reverse printing of the word "stainless" directly below the product name on the face of the carton. Jar labels have been completely redesigned, modernized and simplified to carry out the same treatment as that adopted for cartons. The light blue color is used as overall background on the front of the label, eliminating a white border formerly used, which gives the labels a much more modern feeling.

Previously the company felt there had been some confusion between its VapoRub package and the Va-tro-nol package. The redesigned Va-tro-nol package now has a bold dark blue

panel on both front and back of the carton with company and product name on this panel in white. By this differentiation, the druggist and consumer can easily distinguish the package from its sister product.

The cough drops are pick-up items over the counter and in redesigning the package it was felt that a stronger panel to feature the trademark and product name would be a decided asset. Thus, the blue band formerly used was removed and informative data were printed in dark blue directly on the light blue background. This gives more emphasis to the name panel which carries much larger white lettering on a dark blue background than the former package. The same rectangular motif for trademark and product name is repeated on the reverse side of this package, as big as possible in view of other necessary data that are required. Side panels have been strengthened, too, for greater visibility. The chief aim was to produce a package that would say "Vicks" no matter how it might be stacked or displayed on the counter. Each of the six sides is now a miniature billboard that says "Vicks."

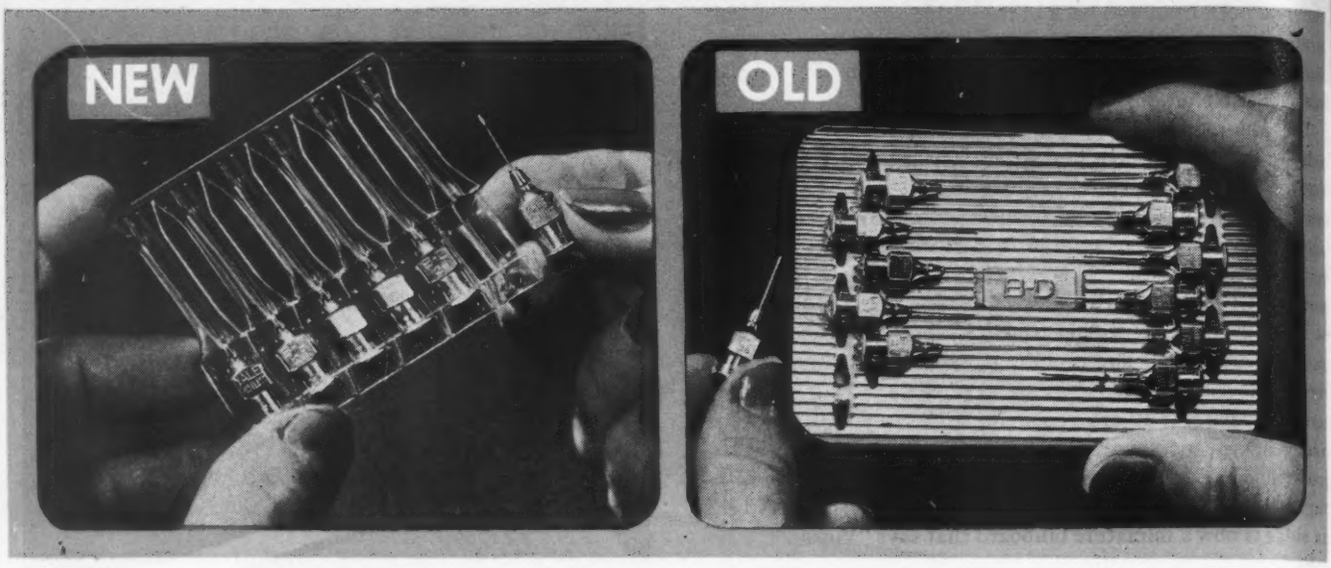
Perhaps the most noticeable change of all is the relabeling of Vick's newest product—the inhaler first introduced in 1940. The inhaler is molded of white urea formaldehyde. The label is decalcomania. Formerly this label appeared on the inhaler so that you read the copy around the container. Now the label has been turned around so that it is read from end to end. The visibility advantage is easily seen by a comparison of the two labels in the accompanying illustration (Fig. 4). Note how much more effectively the trademark and product name appears on the inhalers placed horizontally on the display card at right in the photo compared with those placed vertically in the old display card at left. Another advantage is the ease with which the horizontally placed inhalers may be removed from the card.

CREDIT: *Designs by Georges Wilmet, New York.*

3

4

3—Cough-drops, an over - the - counter item, needed more display. Hence the strengthened visibility on all faces of carton. 4—Horizontal label on inhaler provides large display area. Compare it with vertical treatment at the left in the illustration.



1—Hypodermic needles are packaged in strips of six in acetate which is slit and formed to hold each needle individually and protect the extremely delicate point in a channel drawn 1/8-in. deep. **2**—*Formerly the needles were clipped to a sheet of brass, leaving the points exposed and liable to dulling or damage.*

Point protector . . . drawn from sheet plastic

Hypodermic needles are a large-volume item of ethical manufacture with which the general public usually comes in contact only in a painful way. Yet doctors and nurses say that a *sharp* hypodermic needle causes no pain. Finding the sharpest needle among the many brands and varieties available is often like the proverbial search through a haystack and when a doctor hits upon a favorite brand he will insist upon it at every purchase.

The considerate doctor uses each needle only a few times, for even the penetration of flesh is sufficient to dull its infinitely fine point. Thus the sale of hypodermic needles amounts to several million yearly and the manufacturer who wins the reputation for supplying needles in the sharpest condition is in an enviable position.

Obviously, a dozen needles cannot be allowed to rattle around in a box. Standard practice has been to immobilize and protect them in some way—usually by affixing each needle firmly to cardboard or a metal plate within a rigid box.

Becton, Dickinson & Co., a leading manufacturer of needles, had what was considered a satisfactory package of this type before the war. A sheet of tensilized brass was punched in a sort of stapling effect, so that two prongs were brought up to hold the neck of each needle firmly. Snapped between these springy prongs, the needle could be expected to stay put. The point itself, however, had no real protection against damage in handling.

About two years ago brass became unavailable for this purpose. Becton, Dickinson brought their problem to a New York firm which previous had done ingenious work for them on displays and dispensers.

They explained the necessity for absolute protection of the needle point. They wanted some kind of package device that would safeguard the needles at least as well as the brass plate had done. They wanted a compact, convenient package for a dozen and—while they were about it—there was an improvement that could be made:

It is not economical to package less than a dozen needles; yet the purchaser often wants only two or three and the druggist will usually oblige by "breaking" a package. When he does so, however, the needles lose their package protection and may easily lose their sharpness before use, reflecting discredit on the manufacturer.

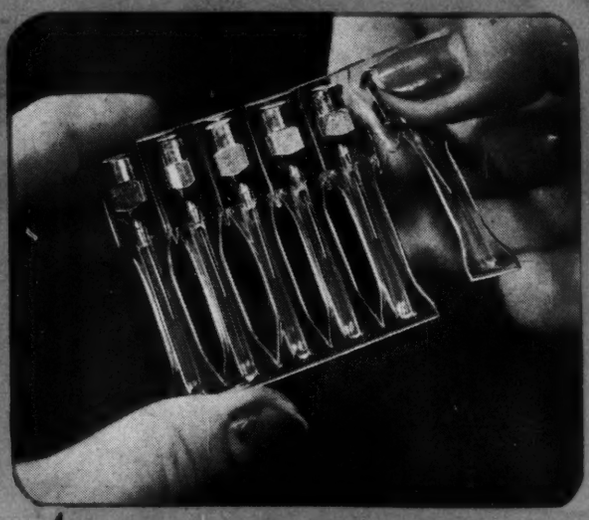
Becton, Dickinson thought maybe something like the metal holder could be worked out in cardboard and they suggested that the cardboard could be scored so that the druggist, in breaking a package, could tear off two, three or any desired number of needles, still attached to board for protection.

The supplier, however, doubted that cardboard would do a foolproof job, and thought he had a better idea. From his experience in working with plastics, he thought a sheet of transparent acetate could be formed in such a way as to hold a row of needles firmly and protect the points along their whole length—better than they had ever been protected before. The strip of plastic could be scored so that sections holding individual needles could be torn off and dispensed as desired. And he had an automatic forming machine, of his own design, which he thought could be adapted to do this job at high speed.

The result is shown in the accompanying illustrations. It admirably combines protection, convenience, economy and even eye appeal—every feature the manufacturer wanted, along with some he hadn't thought of. The package is so popular with the manufacturer, the druggist and the physician-user that there is no thought of returning to metal.

The material is 0.020-in. cellulose acetate. A channel 1/16 in. wide and 1/8 in. deep protects the point, while the heavy base of the needle is clamped in a U-shaped end section

3



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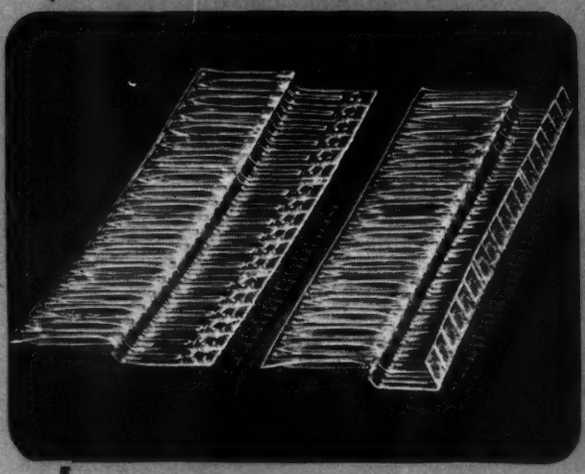


5

3—*Two strips of six needles each are dovetailed together in a compact package. Box which holds them is shown in foreground.* **4**—*The holder is scored so that individual units, or as many as desired, may easily be detached for separate sale, with protection still intact.* **5**—*Holders are automatically formed in strips of 18 units each. Result of the first forming operation is shown at the left. Final bend is formed (right) in a high frequency heating apparatus without distorting the rest of the work.*

with a "dimple" which fits up into the open end of the needle base. The dimple and the spring action of the acetate itself hold the needle so firmly and rigidly that there is no possibility of its shaking loose in the package or in the pocket; yet it is a simple matter to snap needles in or out of the holder.

Score lines between sections are such that they will not break apart without force; yet they may easily be broken off as wanted. So completely are the sharp needle points encased in the plastic that the physician may carry a partial package in his pocket with perfect safety—something that has never before been possible.

A plus value in the acetate holders is that fact that their transparency permits the shopping physician to examine the needles without touching them. The acetate has a laboratory-clean sparkle that enhances the ethical quality of the product.

Needles are packaged at the factory in strips of six; two strips fit together in dovetail fashion in a package of 12. Encased in a telescoping setup box, the 12 needles make a package only $2^1/_2$ by 2 by $^1/_2$ in. The box is appropriately labeled on ends and top and sealed in cellophane.

The plastic forming operation has several interesting features. The depth of the draw on the tiny needle channel and the severity of the formed angles tax the material to the utmost and are considered difficult to accomplish even with hand methods. Yet in this case it is done rapidly and automatically, on only two pieces of machinery.

In the first step, a web of cellulose acetate $8^1/_2$ in. wide is fed into the drawing machine to a predetermined length, sufficient to form 18 spaces for needles. The heated die which forms the critical longitudinal bend at the base of the needle channel is set at an angle, and the material is brought up against it.

In the same operation, the same die cuts the slits, about 1 in. long, pulls the material together and draws the narrow needle channel to the required $^1/_8$-in. depth. The round dimple which will fit into the needle basis is drawn simultaneously, to a depth of about $^1/_{16}$ in. The same knife-edge that cuts the slit also completes the score mark across the remainder of the width of the material.

At this point the work is complete except for the final bend which forms the base of the holder. This bend must be made without distorting the dimples, which are essential to securing the needles. The base bend must be straight and precise. A heated blade, it was found, would hopelessly distort the material.

The problem was solved by electronics. The strips are fed into a high-frequency heating unit which applies instantaneous heat along a line only $^1/_{32}$ in. wide. Automatic timers turn off the heat on a split-second cycle as an arm comes up and turns the edge to the desired angle.

Strips can be produced thus at the rate of 6,000 to 7,000 units a day. Already, strips sufficient to package more than 4,000,000 hypodermic needles have been turned out.

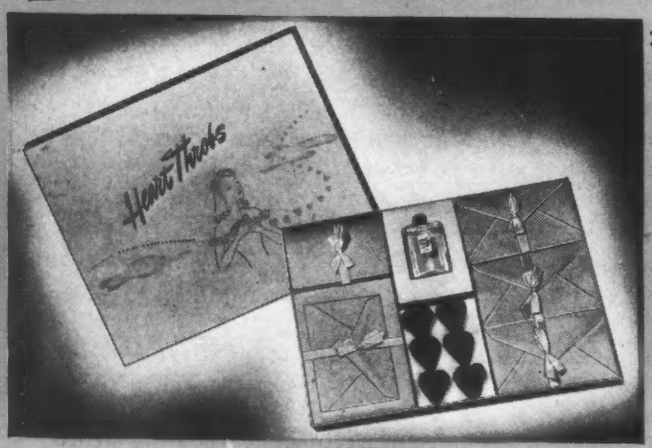
Obviously, the principles of this point protector may be adapted to many other products which will similarly benefit from protection, visibility and convenience in handling.

CREDITS: *Plastic holders designed and fabricated by Design Center, Inc., New York. Patents applied for. Material "Lumarith," by Celanese Plastics Corp., New York.*

PACKAGING

1 John-Frederics, the well-known hat designers, are now producing cosmetics for men and women as well as headpieces. This "Golden Arrow" perfume package, using a squat two-ounce bottle, achieves distinction with its unusual closure. The golden tail of an arrow reminds the user at all times just what the name of the product is. The rough cloth outer bag, with a draw-string closure adds a bit of the masculine touch as well as protection to the completed package.

2 This box of six Yankee Clover compressed sachets is a fine example of the new art work adopted for all of the Yankee Clover packages. Richard Hudnut is endeavoring to express the homespun freshness of this truly American scent with designs similar to this one of a cosy farmhouse kitchen scene. Each one of the products uses a different scene all patterned along the same lines using the same type of characters.



3 Each letter can now carry its own little scented heart—scented with a touch of "Heart Throb" perfume. This latest addition to the stationery counters is packaged to include 24 absorbent red hearts along with a small bottle of the perfume. Forty-eight social-size sheets, 24 note-size sheets and 60 social-size envelopes are tied with the conventional ribbons—but here conventionality stops. The acetate-covered compartment holding the hearts is bound to draw the gift-hunting eye to this unusual package. Design, Alan Berni, New York.

4 For more than fifty years Richard Frank & Co., Inc., has been well known in the institutional food line supplying items such as hot-chocolate powder, fountain syrups, flavoring extracts and dessert preparations. A reflection of the character and tradition that has guided the growth of this firm is seen in the label recently adopted. It is printed in four colors to simulate the yellowish brown of antique parchment and carries the Richard Frank seal in red and the name in black. The whole family of products will now be identified by this new label.

5 In order to keep the unused portion of a roll of "Frostinette" free from dust and dirt, the Adler Co. has devised this dispensing carton to hold fifty feet of the handy material. Formerly the home-size roll was simply banded with a paper label. The company feels that this new type of packaging not only protects the roll, but it also makes it easy for the housewife to snip off the correct length needed to outer-wrap her frozen foods after they have been protected with an inner moistureproof wrap. Carton, C. W. Zumbiel, Cincinnati, Ohio.

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PAGEANT

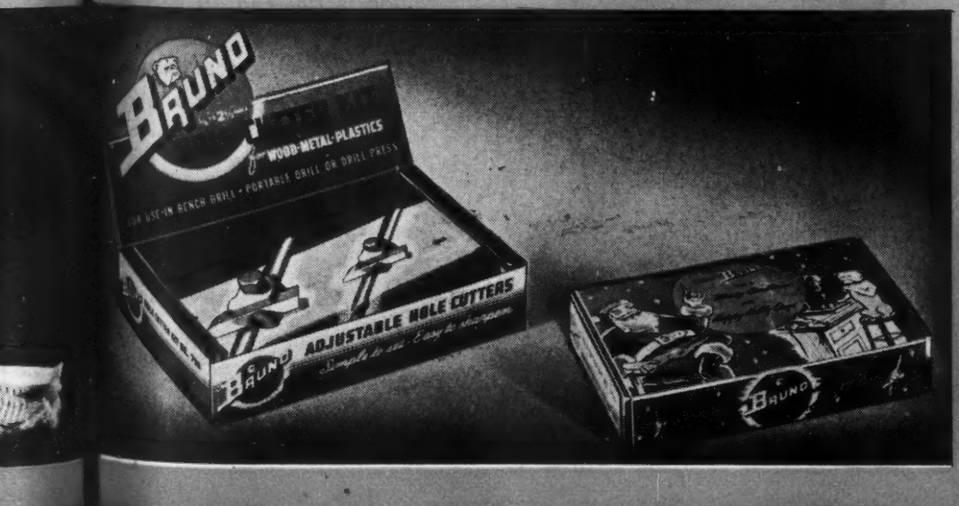
6 Schiaparelli adds a big, chunky cake of Snuff soap to her line of quality toiletries for men just in time for the Christmas gift trade. Like the other Snuff products, perfume and eau de cologne, the soap is packaged in a modern version of a cigar box. This one happens to be a sleeve box covered in a simulated wood-grain paper. The huge cake of soap is tightly wrapped in cellophane and finished off with an attractive oval label. The outer wrap is an all-over pattern paper sealed with the distinctive "S" seal, for Schiaparelli.

7 VitaMight, the diet supplement product of Vital Foods Corp., which is sold exclusively to industrial concerns for use by employees, has just appeared in a brand-new package. As the result of a survey conducted among the users constructive improvements have been made over the old method of packaging. The new package consists of two airtight bottles with plastic top, packed in an attractive two-color printed box lined with corrugated waxed paper. Bottles, Continental Glass Co., Chicago. Cartons, McCracken Box & Label Co., Chicago.

8 Dry-Pack of Lyons, N. Y., has added another product to its list of packaged dehydrated foods—"Pumpkin-Pie Mix." The pumpkin on the front of the box is in natural color and for full visability it is set against a background of vivid blue. The mix itself is enclosed in a waxed-glassine heat-sealed envelope within the folding carton. Envelope, Benj. C. Betner Co., Devon, Pa. Carton, Stecher-Traung Lithograph Corp., Rochester, N. Y.

9 Continental Distilling Co. is taking no chances on having its whiskey confused with other brands. Currently featured is this overwrap for Philadelphia whiskey. Simple in design, the blue and gold tissue-wrap is twisted around each bottle before it is placed in the case. Although the bottle's conventional label and necker are underneath, the wrapper's emphasis on the brand name and Liberty Bell trade-mark gives the bottle an added distinction. Wrapper, Milprint, Inc., Milwaukee, Wis.

10 Bruno Tools of Beverly Hills, Calif., announces a new tool kit for hole-cutting tools for wood, metal or plastics. The kit is a folding carton which may be set up to serve as a counter display. The tools are held in place on a die-cut platform which fits into the carton. Since these kits are meant, in the main, for the home-hobbyist, the addition of a special Christmas wrap makes it an ideal and unusual gift for the man of the house who likes to work with tools in his own basement. Carton, Standard Paper Box Corp., Los Angeles, Calif.



(Page 121)

Picture-frame boxes for heroes' decorations

Decorations are meant for display whether they are badges of honor, such as the Purple Heart shown in the above illustration, or sparkling jewels. Yet, too often, they are shut away from sight in conventional velvet or satin lined boxes during most of their existence.

All this will be changed when transparent plastic boxes are adopted by jewelers just as they have been accepted by the Armed Services for Army and Navy medals and decorations. The transparent tops of these cases put decorations on permanent display, set off by the solid blue of the bottom half.

Until a short time ago medals of both branches of the services were presented to recipients in boxes made of aluminum and imitation leather, wood and imitation leather or a combination of several other materials. Aside from the fact that these old-type containers lacked the sparkling appearance of the new plastic boxes and shut their contents from sight, they also were susceptible to deterioration in storage and in long-time use.

Stock keeping was also a problem when solid-faced boxes were used. If clerks were to be saved the trouble of opening each medal container to ascertain its contents when the call came for a presentation, the name of the decoration had to be stamped on the cover of the box that held it. And while this system reduced the labor of one supply section, it added to the duties of another. Once stamped, the box could not be used for a different medal. It was necessary, therefore, for the Army or Navy supply section to keep in stock as many types of boxes as there were decorations.

Now, thanks to the transparent acrylic top, one box serves for all medals. A glance at the case is all that is needed to ascertain the decoration it contains—and without the help of any gold lettering on the outside.

There is another novel feature of these injection-molded, two-piece plastic boxes. A small hole in the shape of a keyhole is molded through the solid blue bottom, approximately three quarters of the way toward the end that would be termed the top should the case be stood on its edge. This opening makes it possible for the owner of the decoration to hang the box and its contents on the wall. There it can be on permanent display, yet be protected from the deteriorating effects of dust and moisture.

It is very possible that civilians could make good use of molded acrylic containers with keyholed backs. In almost every home there are treasures which are deserving of display but are seemingly designed to collect dust in unbelievable quantities the moment they are put on view. As a result, they are either buried away in drawers or displayed until they are too faded and soiled for anything but the trash barrel. A box with a transparent cover would be ideal for such objects.

An idea and how it grew

It was in the fall of 1944 that the idea of a molded plastic box for military decorations reached a point where a handmade model was ordered on the lines of a sketch submitted by a designer. After a few minor changes, this model was approved by the Plastic Section of the Research and Development Branch of the Quartermaster General's Office; and the plastic molders who produced the model case were authorized to build production molds for a sample lot of injection molded acrylic cases. Now, only a year after the submission of the idea to a molder, the boxes are being produced in quantity and contracts have been placed with a number of plants—the molds following the lines of those built by the original molder.

According to the specification established by the Quarter-

1 *and* **2**—*These medal boxes are molded in two parts. The clear acrylic top is finished off with a hand-painted gold border. The bottom of the case is solid blue and has a keyhole opening which makes it possible for the box to be hung on the wall.*

3—*Molded acrylic boxes, which have been adopted by the Armed Services for all Army and Navy decorations, should prove equally popular with jewelers and display managers. They serve the dual purpose of protecting contents while putting them on permanent display.*

master Corps. "The container shall consist of an injection molded, polymethyl methacrylate top and bottom, spring-closed, with a pad having attaching clips. The top of the container shall be crystal clear, the bottom an approved shade of translucent blue." The acrylic materials used for this work have a specific gravity of 1.20 at 77/77° F. (plus or minus 10%). To insure the lid's closing with a snap, two C-hinges that contain 0.70 to 0.80% carbon are used in each assembly. These were felt to be preferable to pin hinges not only because they would permit the transparent cover to snap open and shut, but also because they would hold the lid open without danger of its dropping closed as soon as the hand that opened it was removed.

A single mold with four cavities is used by the molding company in the production of these citation or medal boxes—two crystal-clear tops and two translucent blue bottoms being turned out at one time. As can be seen from Fig. 3, the lower half of the case is grooved around the outer edge on three sides so that the lid, which has a matching groove molded on its inner edge, will have a firm seat when the container is closed. Another groove is molded into the cover on its underside, running like a border around the top approximately 0.35 in. in from the edge, and one which adds much to the charm of the piece. One of the final operations on this box is the application of gold-colored enamel in this groove.

For the Army and Navy, these boxes must hold the medal itself, the ribbon bar that is worn on a military uniform and the small metal and enamel bar that is worn on civilian clothing. Three clips, two of one type and one of another, are set into the cloth pad to hold these three pins in place. Interestingly enough, the center of the Purple Heart medal is also of plastic, being injection molded of acrylic.

Before these boxes are shipped to the military services they are subjected to a number of rigorous tests. From each shipment lot of 500 containers or less, 6 samples are picked at random and put through a hinge test, a salt test on the hinge springs only, and a service test. Three additional samples are picked for use in the weatherometer test.

In the hinge test the lid is opened 2 in. and forced $1/2$ in. to the left and to the right at the end opposite the hinged end. After such treatment the top must remain attached to the container bottom by both springs and return to a normal position when released. In the accelerated service test, after the parts are subjected to both the dry and wet procedures they are placed bottom side down on a surface plate and tested for warpage with thickness feelers. A right-angled straight edge is also employed to determine alignment of the sides of the box. Any deviation from the original alignment in excess of $1/32$ in. shall be cause for rejection.

Now that the war is over

Soon these acrylic boxes should be making their appearance in windows as display cases and jewelry boxes. They possess the double advantage of protecting the contents from dust, moisture and other harmful forces while allowing them to be constantly on view.

CREDITS: *Boxes designed by B. Aristide Cianfarani. Molded by Standard Plastics Co., Attleboro, Mass. Materials: Lucite, by E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; Plexiglas, by Rohm & Haas Co., Philadelphia. Hinge by Rathbun Molding Corp., Salamanca, N. Y.*

Glass and plastics . . . resistance to shipping hazards

Through the cooperation of two container manufacturers, an independent testing laboratory and a manufacturer of blown plastic bottles, it has been possible to make a series of tests that shed light on the question of the comparative resistance of glass and plastic bottles to shipping hazards. The glass containers performed according to well-known standards; breakage occurred after about 46 to 69 falls in drum tests. Acetate bottles showed greatest endurance, surviving 150 falls at which point tests were discontinued. Butyrate bottles showed breakage at 51 falls, while polystyrene bottles went to an average of 67.

Shipping containers for glass packages, of course, have been tested many times and the requirements are well known to the common carriers as well as to shippers and manufacturers.

The unknown quantity for the moment is the performance of various plastic materials fabricated in bottle form. There are several manufacturers who have engaged in the production of plastic bottles; one of these has cooperated by supplying samples of his products and expressing a willingness to have them subjected to all the tests which they must face prior to their acceptance commercially as unit containers.

Rather than subject the packaged containers to the uncontrolled test of actual shipment, where one carton might well be given extremely rough handling while another would make the trip with hardly a knock, both the plastic and glass bottles were put through their paces in the laboratory. A 7-ft. hexagonal drum, studded on the inside with various obstacles designed to subject the test package to as great a number of different types of falls as possible, was used for this work.

Plastic bottles of three different formulations were supplied. Eight of each, packed in suitable corrugated containers, were subjected to a series of tests. That number, packed one high in two rows of four each, presents a maximum of outer surface to receive the action of the shocks resulting from drum tests. In the event a bottle broke, it was replaced with a fresh one; thus many of the bottles survived as many as 750 falls. Specifications of the plastic bottles follow:

Material	*Dimensions*	*Capacity, Cc.*	*Weight of 8 Empty, Gr.*
Acetate	$2^1/_4$ in. outside diameter $5^7/_{16}$ in. high	233	287.2
Butyrate	$2^1/_4$ in. outside diameter $5^7/_{16}$ in. high	233	287.2
Polystyrene	$1^{15}/_{16}$ in. outside diameter $4^1/_2$ in. high	127	225.6

For purposes of comparison, glass bottles were obtained as close to the foregoing specifications for the plastic ones as could be found. These were as follows:

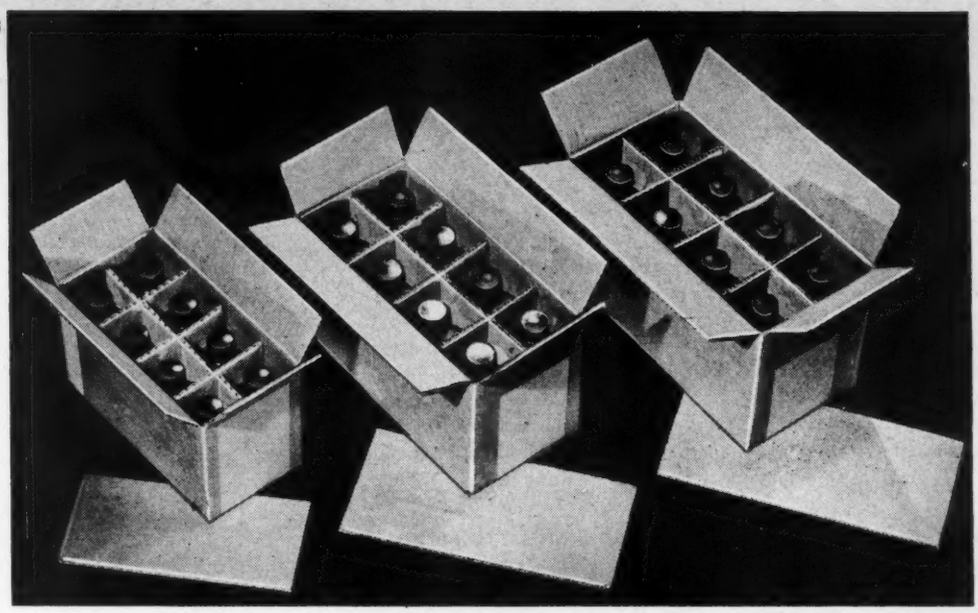
1

2

1—(Above) A heavy construction container with extension edges. This container was the one used for the preliminary experimental test.

2—(Left) The five bottles tested were, left to right, acetate (red), 233 c.c.; butyrate (amber), 233 c.c.; polystyrene (clear), 127 c.c.; flint glass, 239 c.c. and 113 c.c.

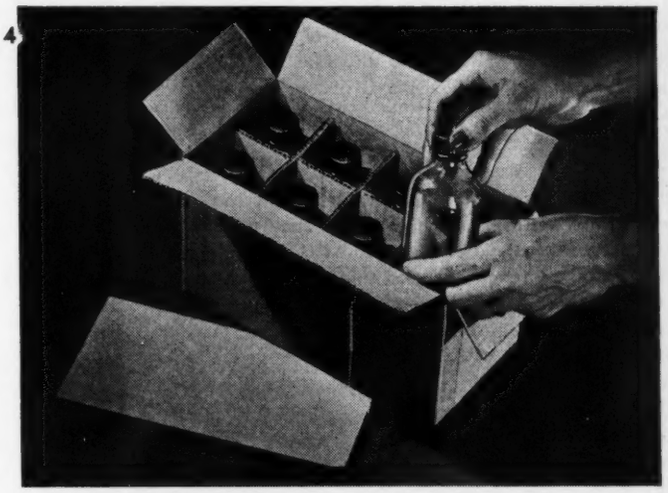
3



3—Three lightweight containers used in the actual test. Left to right: Smaller size used for small glass bottle and polystyrene container; medium for acetate and butyrate bottles, 233 c.c.; large for 239 c.c. glass bottle. **4**—*When glass bottle broke it shattered. Fracture of this butyrate bottle left the container nearly intact.* **5**—*The 7-ft. hexagonal drum, studded with obstacles, used in test.*

Material	*Dimensions*	*Capacity, Cc.*	*Weight of 8 Empty, Gr.*
Flint glass	$2^{3}/_{8}$ in. outside diameter $5^{11}/_{16}$ in. high	239	1,252.0
Flint glass	$1^{15}/_{16}$ in. outside diameter $4^{1}/_{2}$ in. high	113	818.8

4



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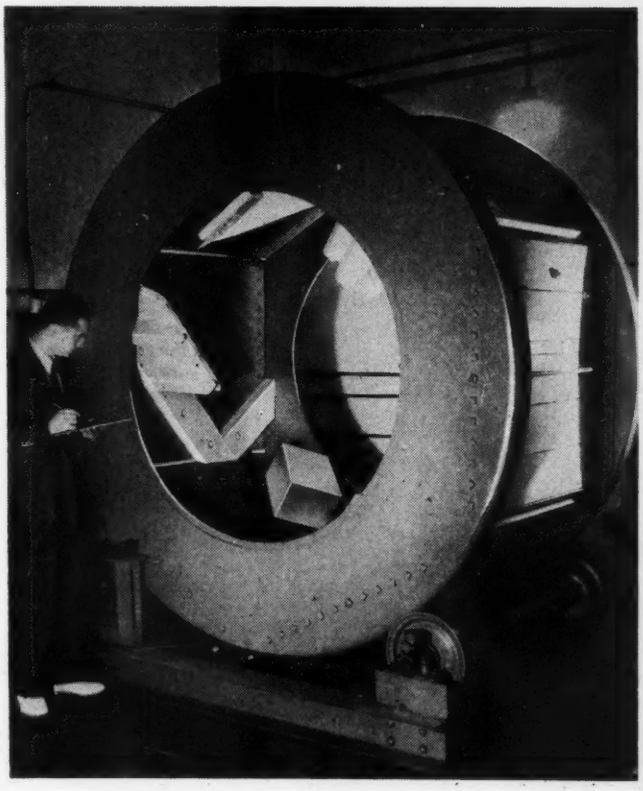


All the bottles, both glass and plastic, were fitted with standard type plastic closures. The dimensions given above include the closures.

Boxes of two types were provided, made especially for these tests with partitions for interior protection for packing eight bottles, one high in two rows of four each. Some of the containers were made with extension edges on the interior partitions, but a preliminary test was run with one of these which demonstrated that such a packing was far stronger than would ever be required. Consequently, in the subsequent tests all of the boxes used were of the regular slotted carton style of construction made of B Flute 125 lb. test corrugated with non-test A Flute partitions and top and bottom pads. The loaded boxes were sealed with 3-in. kraft paper tape. All the boxes were conditioned for 24 hrs. at 65% R. H. at 70 deg. F. before the tests were run.

For purposes of the test the larger size glass bottles and the two larger sizes of plastic bottles (i.e., the acetate and the butyrate bottles) were filled with lubricating oil approximately S.A.E. 15. The smaller size glass bottles and the polystyrene bottles of approximately the same size were filled with 25% solution of alcohol. Filled, the weights were as follows:

Material	*Weight Single Bottle (Filled), Gr.*	*Weight 8 Bottles (Filled), Gr.*	*Gross Weight 8 Bottles and Container*
Acetate (large plastic)	36	288	4 lbs. 11 oz.
Butyrate (large plastic)	36	288	4 lbs. 12 oz.
Polystyrene (small plastic)	28	224	3 lbs. 1 oz.
Glass (large)	157	1,256	6 lbs. 14 oz.
Glass (small)	102	816	4 lbs. 2 oz.

It should be borne in mind (*Continued on page 184*)

DISPLAY GALLERY

1 This photo shows the new permanent counter display-dispenser designed for Bright Star batteries. This particular display is made of methyl methacrylate but the designers are experimenting with other transparent plastics to find the most suitable and economical one for their needs. The batteries may be replenished from the top and all four sides of the display have an opening at the bottom from which batteries are dispensed, one at a time. Clips in each of the four joints display flashlights in this unique counter unit. Molding compound, E. I. du Pont de Nemours & Co., Inc., Wilmington.

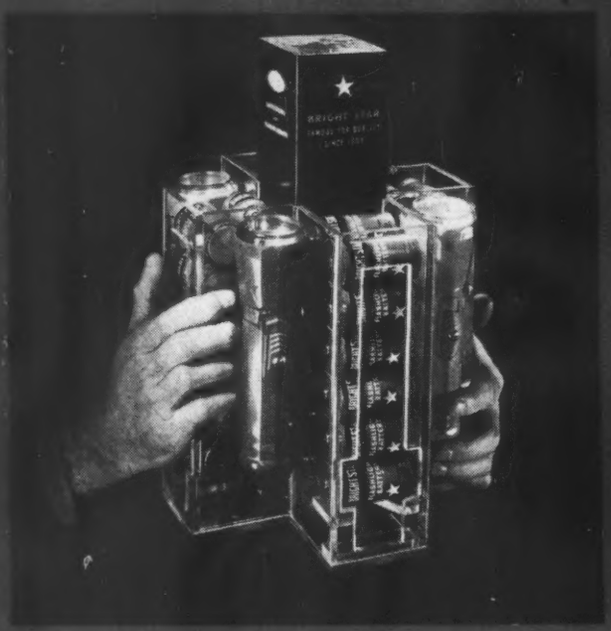
2 The Pal Blade Co. faced the problem of putting across the message that the new Pal blades are "Hollow Ground," without using an excess amount of copy. This eight-color display was finally designed by animating the company's trade character used for many years. By having the balloons featuring the "hollow ground" story a minimum of copy was needed. Smaller reproductions of the cards, all easel mounted, are also available for counter use. Display, Einson-Freeman Co., Long Island City, N. Y.

3 A newly designed display for Hawick's men's toiletries uses a gray and white background lettered in black as the neutral tone to set off the old-fashioned figure with the beaver hat. A brilliant red coat combined with blue and white checked pants adds a touch of color to this window piece. The panel which shows the brown crockery jars in which Hawick's products are packaged has a blue background framed in gold. The easel-mounted display comes in two sizes, one for window use and the other suitable for the counter. Display created and produced by Hussey-Woodward, Inc., New York City.

4 Tenderleaf Tea is using one of the first postwar floor stands to be seen around the retail stores. The six-sided paperboard stand has a platform which fits into the top of the display to hold the cartons of tea, making a jumble effect. The tea-leaf trademark in green contrasts nicely with the brilliant red of the base of the display. In order to tempt impulse sales a generous circle is provided for penciling in the current price. It is suggested for use in some "hot spot" in the store. Display, Lutz & Scheinkman, New York City.

5 Revlon turns to aluminum—pink aluminum—for this utility tray-display combination for the exclusive use of the manicurist. The tray holds twelve Revlon colors in professional-size bottles. The only advertising on the starkly simple display is the script lettering which is stamped right into the metal. The tray is useful as well as decorative as the color is impervious to acids and will not chip nor rub off. Planned for long-time hard usage, the tray may be refilled constantly with a selection of the customers' most favored nail shades. Tray designed and produced by Nathaniel H. Freeman, New York City.

6 This delicately tinted portrait which forms the centerpiece for the latest Richard Hudnut display is effectively set off by means of a daintily ruffled frame. The frame is held away from one side of the portrait by means of shallow tabs giving the picture a three-dimensional effect. A circular stand fastens to the base of the display which is sturdy enough to hold an array of actual packages of the line. If, however, the dealer cannot spare enough actual packages or is afraid of pilferage, he may use dummy packages which are provided in the manner shown in the inset. Each reproduction of a package is scored in such a way that it need only be punched out of the card, bent back and is then ready to stand on its own easel. The display, while designed essentially for window use, is also suggested as suitable for interiors. Lithography of display, Columbia Lithograph Co., New York.



PAL
HOLLOW GROUND
RAZOR BLADES
PAL BLADES ARE NOW RUST RESISTANT
FOR A FEATHER TOUCH SHAVE
YOU'LL FEEL THE DIFFERENCE WITH YOUR VERY FIRST SHAVE!

Tender Leaf
BRAND
Tea
TENDER LEAF TEA
TENDER LEAF TEA

MEN'S TOILETRIES
from the House of
HAWICK
STYLED FOR MEN
Jugs and Mugs in Pottery
HAWICK
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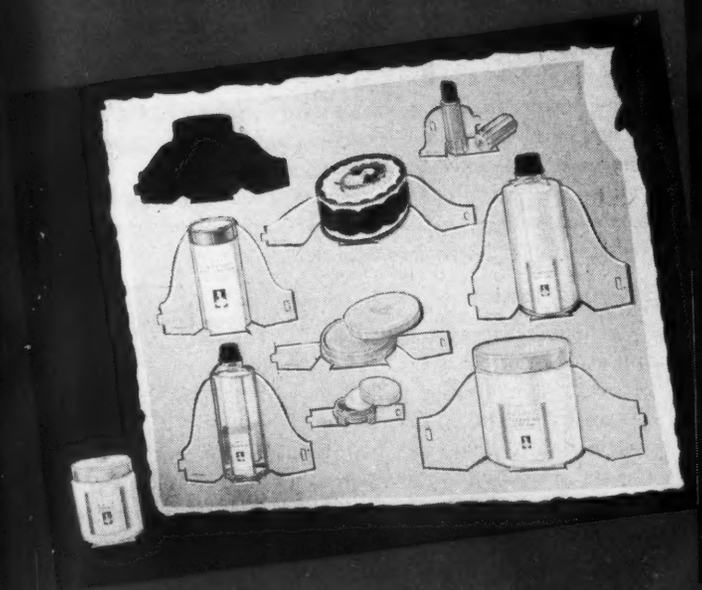
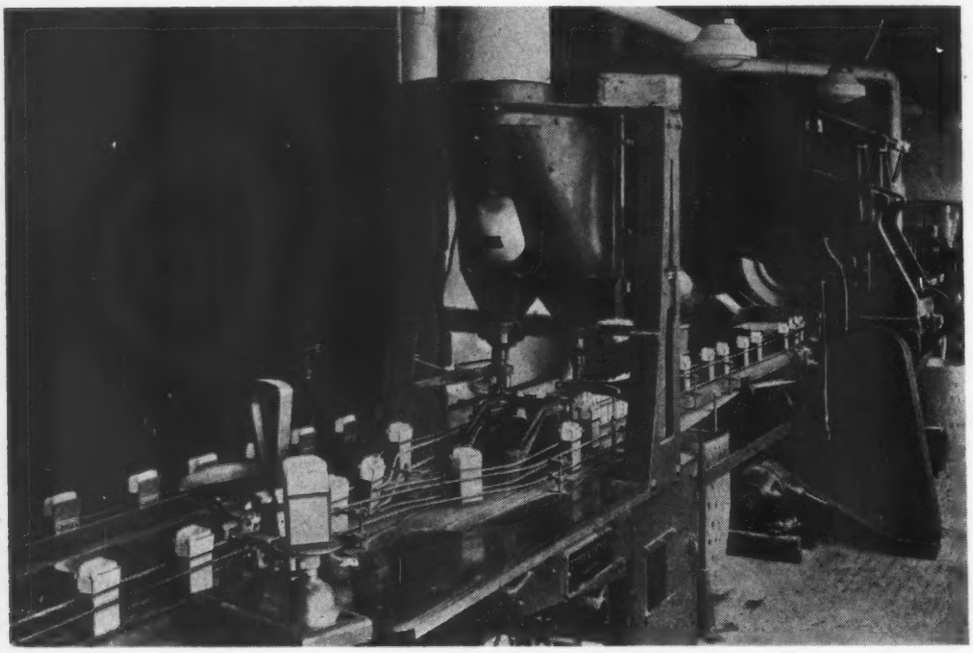
Beauty Preparations



Vibration . . . *its principles and application to packaging*

*by G. D. Alvord**



1—A small vibrator mounted on hopper facilitates the flow of dessert powder through two filling heads. Both heads fill simultaneously.

Vibration is very detrimental to machinery in general, but the art of controlled vibration as applied to packaging equipment has proved beneficial and has introduced improvements in three distinct forms:

1. Vibrators for promoting the flow of difficult materials in the hoppers and chutes of packaging machines.
2. Vibratory feeders for controlling the flow of material to the package or weigh bucket.
3. Vibratory packers for settling the material in the package after it has been weighed.

The latter point has become increasingly important to many packagers. Not only has there been a great increase in recent years in the number of fine, granular or flaky materials being packaged and marketed—soap flakes and powders, dehydrated foods, cake mixes, dessert powders and the like—but at the same time the Federal Trade Commission has become strict in its enforcement of the rule against "slack fill," which it classifies as deceptive packaging, subject to stiff penalties. Without some such device as a vibratory packer, to take care of settling during the packaging operation, it is impossible with many products to avoid settling during shipping and handling which will give the impression of a slack fill when the package is opened by the consumer.

Vibratory devices are now commonly applied to packaging machinery, where the need is indicated, by the machinery manufacturer. Such devices can, however, readily be applied to existing machinery. In a great many cases, the only change necessary to make existing filling machinery function more efficiently has been the addition of a vibrator to the hopper and/or chute feeding to the weigh bucket or package.

An example of a change in product, due to modern merchandising practices, which calls for vibratory filling where it was not previously needed, is found in coffee. With the whole bean or coarse-grind coffee, no difficulty was experienced, but the finer grind, demanded by modern coffee-making equipment, would not flow through the hoppers and chutes without some agitation.

Many of the dehydrated foods were found difficult to handle in ordinary hoppers, but with the addition of a vibrator to the hopper this difficulty was readily overcome.

The dehydrated foods industry uses vibratory equipment for feeding and packing cubed dehydrated potatoes into shipping cans, for settling dried milk in cartons, for packing cans of onion powders, for pectin, beets, eggs and carrots.

The coffee-packing industry uses vibrators in the filling of jars, paper bags and cans, both on the hoppers and in packing containers.

Vibrators are employed in packing barrels of cocoa, in settling a powder chocolate mixture into packages on a conveyor, in packing barrels of powdered sugar and in packing hard candy in 2-oz. and 4-oz. jars.

Cosmetic, drug and pharmaceutical manufacturers find many uses for vibration in packing powdered products and pellets in many types of containers.

Hopper vibrators

A hopper vibrator consists of a compact, self-contained pulsating electro-magnet which is bolted to the hopper and a separate control which provides approximately 3,600 impulses per minute to the vibrator.

A period of 3,000 to 3,600 impulses has proved to be the most universally desirable period for hopper applications. If 25-cycle current is available, the control consists of a rheostat and operating switch. This will give 3,000 impulses per minute when operated directly from alternating current.

* Manager, Materials Handling Equipment Department, Syntron Co., Homer City, Pa.

As 60-cycle is far more common than lower frequencies, the control must include additional equipment to produce 3,600 impulses per minute from 60 cycle. There are several types of control—the simplest being a half-wave rectifier which in effect produces pulsating DC from alternating current.

The vibrating unit itself consists of an electro-magnet with an air gap between the pole faces, held open by means of a flexible mounting, either rubber or spring. The magnet and flexible suspension are arranged in a suitable case or frame for bolting directly to the hopper. Units are available weighing from 4 lbs. to 660 lbs. Packaging equipment generally is supplied within the range of the smaller models weighing 9 lbs. to 15 lbs.

Fig. 1 shows a hopper application in which one small noiseless vibrator promotes the flow of material through a hopper with dual outlets. Such an application is perfectly satisfactory as long as the two fillers are discharging at the same time. It would not be satisfactory if the fillers were discharging alternately. Vibrators should never be operated on a hopper that is not free to discharge, as the vibration would pack the material in the hopper just as it does when used for settling material in containers.

Fig. 2 shows an example of a hopper which handled whole bean coffee and coarsely ground coffee perfectly satisfactorily, but which required the addition of a vibrator to handle the finer grinds.

In a great many cases the standard type of packaging machine would not handle newer products, such as dehydrated vegetables. The use of a built-in vibratory feeder made it possible to handle material in high speed packaging which could not otherwise be packaged in mechanical devices.

Vibratory feeders

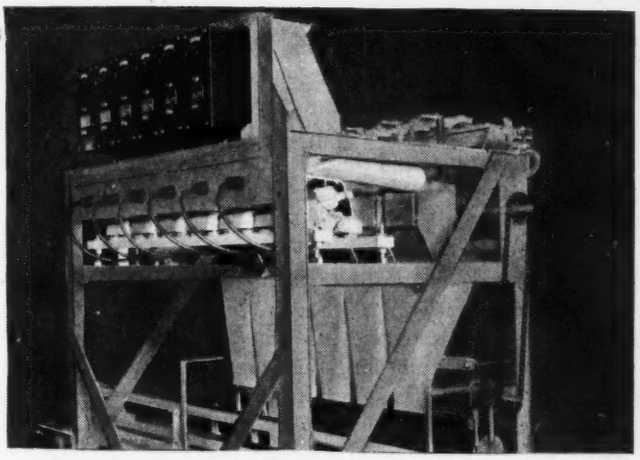
A vibratory feeder consists of the same type of electro-magnet and control as the hopper vibrator, but it is mounted in conjunction with a trough that will flow material in a horizontal position. The vibratory feeder is especially desirable for high speed weighing as it functions in $^1/_{120}$ of a second, which is far quicker than the opening or shutting of any mechanically operated gate. This means that the fast rate of feed for the bulk of the package can be cut to a fine dribble and the final cut-off made in a very few seconds.

Vibratory feeders can be used on materials which would be damaged in other types of equipment. Delicate flakes, or any material which has a tendency to pack or ball when subjected to the least pressure, can be handled by vibration. Corn flakes or crackers can be handled without damage in a vibrator-feeder packaging machine. Gum drops and other semi-soft candies are not damaged in this type of equipment.

The vibratory feeder can be furnished in a wide range of sizes—from the small, triangular-shaped troughs for feeding a few grams of such rare drugs as penicillin up to 10-ton models for filling 200-lb. bags. Feeders can be furnished with tubular troughs or covered troughs making them dustproof or sealed against the atmosphere. There are no

2

3



4

2—Application of a vibrator to a hopper-feeding coffee-packaging machine; this is required for finer grinds. 3—Multiple batchweigh using six small vibratory feeders, one for each of the filling heads. This machine packages and weighs dog food, either pellet or ground, at the rate of 60 two-lb. packages per minute. 4—Small packages of photographic chemicals, weighed in grams, are filled from vibratory feeder having V-trough and two-rate feed controllable by 1/120th of a second.

moving parts other than a slight movement of the trough, which is spring-mounted. There is no hazard of personal injury. With the covered or tubular trough the entire path of the material from the supply hopper to the package can be sealed. In some cases on small units for handling drugs the entire unit, including the supply hopper, is sealed in an air-tight case with glass panels, making the operation visible.

As the input in a vibratory feeder is very low compared to motor-operated mechanical devices, the scale contacts and relays are not subjected to severe use. The vibratory feeder requires no lubrication, eliminating the collection of dust on oil-soaked bearings or parts.

In addition to feeding to weigh buckets or containers, vibratory feeders are used to decided advantage in feeding to molding machines. During the war, owing to the contractors' inability to secure adequate equipment, tile molding machines with the addition of vibratory feeders were readily adapted for molding such foods as sugar, K rations and other high concentrates.

Fig. 3 shows how compactly a multiple batch weigh can be made using small vibratory feeders. This is a six-unit net weigh packaging machine.

The application in Fig. 4 shows how very small packages of photographic chemicals are weighed manually. Where only a few grams of material are required, the vibratory feeder, equipped with a V-shaped trough and arranged with two-push-button, two-rate-of-feed control, has been found to be a very accurate method of weighing. This method surpasses in delicacy the actual manual handling of the material. The two pushbuttons are for starting and stopping. The start button, when pressed momentarily starts the feeder at the fast rate of feed. As the scale approaches the weight desired the stop button is pressed and held in. This cuts in a slow dribble feed for accurately finishing the weigh. The slow feed continues as long as the stop button is held in. As the scale indicates the exact amount, the thumb is released and the feeder stops within $^1/_{120}$ of a second. It has been found by actual test that the quickest human reaction is the removal of the thumb. There is only a possible delay of $^1/_{120}$ of a second, which accounts for the high degree of accuracy that can be obtained with this method of control.

Vibratory packers

The use of vibratory devices for settling the product in the final container has other advantages besides the avoidance of slack-filling complaints. It reduces the size of the container and thereby reduces the cost of materials and saves shipping space. It saves space on the retailer's shelves. Even though a package which has settled in handling may escape an FTC complaint, it is important to consumer acceptance that it be found filled to the top when opened.

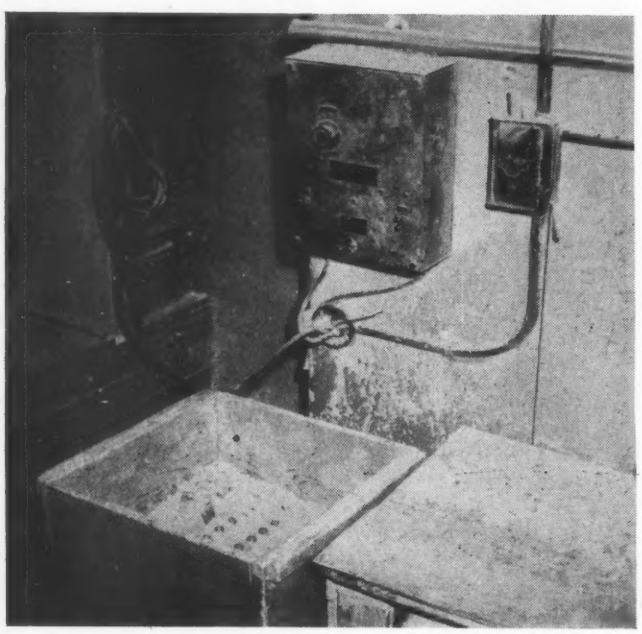
Vibratory settling also reduces the amount of entrapped air in a package and thus reduces the deleterious effect which oxygen has on many products. Coffee benefits notably in this respect. Coffee is frequently gas-packed to drive out air and facilitate denser filling.

The amount of settling or reduction in cubical content of a certain weight of material depends upon the characteristics of the material. Some materials will be decreased as much as 30%; however, 10 to 20% is a more normal expectation.

In general, the application of vibration in settling is by means of the standard hopper vibrator mounted underneath a floating metal plate (spring or rubber mounted) over which the package passes. In some cases the package rides directly on this metal plate and is moved by means of a chain conveyor—the vibratory packing action being performed as the package moves along. In other instances, packages are placed manually on the vibrating platform for a few seconds —this generally where the container is too large and unwieldy for the usual type of automatic equipment. In many applications a canvas belt rides over the vibrated plate and the cartons or packages are vibrated in transit. On difficult materials there are generally several vibrators in tandem and the packages are vibrated several at a time. Practically all types of containers can be vibrated, including pasteboard cartons, metal cans, glass bottles, paper bags, cloth sacks and barrels.

In the case of products which (*Continued on page 196*)

5—Unusual is this method of sacking small vials. As many as 48 vials are placed in box, which is loaded with powder and vibrated, causing vials to be filled with close-packed powder. 6—Typical vibratory packer used in filling coffee into jars. Other arrangements of the same equipment on conveyors are possible.



AMA Packaging Conference

SEPTEMBER 18-19 • 1945 • HOTEL NEW YORKER • NEW YORK

The first packaging conference since the end of the war reflected an intense interest in the application of war-born techniques to a speedy change-over to civilian production.

More than 500 registered for the two-day meeting, staged by the American Management Assn. Sept. 18 and 19 as a local conference for those in the New York area. In its representation of leading packaging interests the meeting took on a national character and last-minute relaxation of ODT travel restrictions permitted an attendance greater than had been expected.

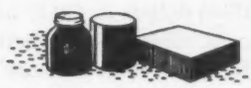
Although no final announcement could be made at the meeting, it was learned that AMA will resume its traditional spring Packaging Conference and Exposition next spring, with the first week in April as the tentative date and Atlantic City the probable locale for a 3- or 4-day meeting. Convenient and unlimited display space is said to be available at Atlantic City and with all travel restrictions due to be lifted by that time the show is expected to be one of the biggest yet staged by AMA.

The New York meeting was notable for its business-like attitude, the frankness of its discussion and the intelligence of the questions asked. There was no social program and none required. Packagers were there to get the answers to their reconversion and supply problems and to learn about trends and they stayed in their seats in the conference room throughout the four sessions and the question-and-answer periods that followed each.

Alvin E. Dodd, president of the American Management Assn., was general chairman and presided over the first session on Tuesday morning. Other session chairmen were Albert W. Luhrs, president of the Container Testing Laboratories, Inc., and vice-president of the AMA Packaging Division, who presided over the "Packaging Problems Clinic" on Tuesday afternoon; H. H. Leonard, president of the American Machine & Foundry Co.; and N. A. Fowler, vice-president of the General Box Co.

An address by Christopher W. Browne, editor-in-chief of MODERN PACKAGING, first on the program, set the stage for the particularized discussions which followed by tracing the development of packaging through the war years and pointing out probable civilian adaptations. There were special papers by other speakers on flexible materials, package design, machinery, materials handling, adhesives, weatherproof boxes and Army-Navy Specifications.

The summary which follows is a digest of the official transcript of the meeting. Because of the timeliness and helpfulness of the discussion and for the benefit of those who were unable to attend because of travel restrictions, MODERN PACKAGING presents this digest at greater length than usual. It forms an extremely important reference work for all packagers.



TUESDAY MORNING

Chairman: ALVIN E. DODD, *president, American Management Assn.*

The Road Forward: CHRISTOPHER W. BROWNE, *Editor-in-Chief,* MODERN PACKAGING.

We have been living in the most eventful and fastest moving period the world has ever known. When the war started in 1939, people were slow to realize that it would affect us and few believed that serious shortages of basic materials were in sight for this country. Some even called it a "phony war."

Then suddenly, with little time for preparation, our economic surpluses abruptly disappeared and we had to find substitutes and makeshifts for everything—or do without. We stopped producing for consumer satisfaction and began turning out goods to be used for human destruction. We had no choice. The issue all too soon became agonizingly clear.

But it wasn't too clear at first. When MODERN PACKAGING published the full text of the first foil restriction order in the fall of 1941, a shocked and indignant voice over the long distance telephone told us we must not publish such things—it would upset business.

But those attitudes changed. The machinery manufacturer gave up all attempts at normal deliveries and plunged into direct war work. The man with the indignant voice began to push with all his might to increase aluminum production for military uses.

Now we are emerging from this most chaotic and destructive period. There is still plenty of confusion, but the materials curve, and the curve of our spirits, are both upward. It's a good time for a careful look in both directions, for three purposes: (1) to appraise the contribution of the packaging field to the war effort; (2) to review some of the new developments that grew out of war's necessities; and (3) to evaluate some of those developments in terms of their future uses.

This war made unprecedented demands on the science of

PHOTOS, ANGELA CALOMIRIS

Alvin E. Dodd, president of AMA and chairman of the Tuesday morning session, was in general charge of the program.

packaging. While material stockpiles and manpower were constantly dwindling, America had to keep constantly increasing the enormous quantities of military supplies. At the same time billions of dollars worth of lend-lease goods were being packaged and shipped to our allies; while a third task was to maintain as far as possible the production and distribution of civilian merchandise and present it in packages as nearly like the accustomed goods as possible.

Packaging met these three challenges. A partial measure of its success may be seen in some statistics on the production of containers compiled by the Department of Commerce. According to these tabulations, the dollar volume of containers increased from a little over two billion dollars in 1940 to nearly three and a half billion dollars in 1944; and the increase was achieved in the face of shortages of practically all raw materials except those for glass—that material was limited by the industry's productive capacity. Estimates indicate that 104,000,000 gross of glass containers were produced in 1944, about double the 1940 production. Folding boxes showed an increase of 27%; collapsible tubes were up to 48%. Shipping containers, as would be expected, show big increases. Nailed-wood boxes were up to nearly three times their normal production, and metal strapping more than trebled. Corrugated- and solid-fibre containers increased 32% and doubtless would have gone much higher if enough raw materials had been available to fill all demands. Steel drums climbed 32% and the fibre drum total was six times as great as normally.

Some of the declines are significant, too: Metal cans in 1944 were 6% below 1940; set-up boxes declined 19%; grocery bags decreased 52%. Behind each of these three figures is a story of somebody doing without in order that a better job could be done for military needs.

Packaging, of course, made its share of willing sacrifices—like everybody else. Packaging people made economies in the use of board and paper; they showed ways to conserve tin and other scarce materials; they adopted substitutes and developed makeshifts and collected salvage. But the packaging field also went without important materials because for a long time there was no general and official recognition of the fact that packaging was vitally necessary to the war effort. It is a question whether the top brass hats in Washington ever did realize there was such a thing as packaging until some of the shipments to the South Seas split open.

If any good can come out of war, it is the stimulation given to technological developments. In some fields it has been said that fifty years' progress has been accomplished in the past five.

Many developments grew out of shortages. Adaptations and improvements appeared with surprising promptness in all of the major materials of packaging. When the sources of tin were shut off, electrolytic coating, Bonderizing, and newly developed lacquers helped to conserve the tin stockpile. Steel was put on the critical list and many products were forbidden to use metal containers. Production in the glass field was increased to help fill the void. Shortages of metal and plastics for closures led to makeshifts and substitutes of paper and pottery.

Regardless of how ingenious some of these substitutes were, and regardless of how good an emergency job they did, common sense tells us that a lot of them will disappear. Some of them have already gone with the wind—the paper closure for coffee and shortening, for instance; and the paper package for tooth powder will be given an honorable discharge. You have only to think of yourself as a consumer—and every one of us is a consumer—to give an intelligent answer to the question "Will it remain?" in the case of many a wartime package.

But some of the answers aren't quite so easy. Will glass, for instance, be able to hold all of its gains? If a product belongs there, for reasons of visibility or convenience to distributor or consumer, that product will very likely stay in glass. (Parenthetically, it might be remarked that all products don't want visibility, even in the food field; canned shrimp, for example—in a glass jar it would look like some of the pictures in your old physiology books.) Marketing studies have been made which would seem to show that sales of some products actually suffer in visible packages.

The fact is that both metal and glass have been doing a bigger and better job than ever. Conservative prophets predict that both glass and tin will enjoy a greater volume after the war than their pre-war normal. The principal reason given is that with bigger incomes people have raised their standards of living—they have had a taste of the more abundant life we used to hear about; they will not be content to go back to former inadequate standards—so there will be more packaging in all kinds of materials because there will be a greater demand.

In both metal and glass packaging, standardization has made great strides and should be credited with important savings both of materials and manpower. Will standardized practices remain, now that the spur of necessity is removed? To some extent, yes; certainly at first; and, of course, mass production products that sell at moderate prices will always welcome the economies that standardization affords. But don't discount the power of individuality. The art of the designer will play its part here, to achieve a distinctive package by means of individualized use of color and design, despite standardization of size and shape. But you may also look forward to containers which are unstandardized, too, simply because any one of us is often willing to pay a little more for a package that is somewhat out of the ordinary in its beauty and appeal.

As the shortages in accustomed materials got more acute, packagers resorted more and more to paper, and some of the miraculous things that have been done with paper represent permanent gains. Paper came to be regarded as a haven of refuge for all perplexed packagers, with the result that very soon a genuine shortage developed—and it isn't entirely over yet.

In other sessions of this conference you will learn, in much more specific detail than my time permits, about many of these new developments. I can only give you a quick picture.

Protection—always better protection—was the prime objective of packaging through the war years. Likely to find a permanent place is the hot-melt dip method of packaging metal parts. The process is quick and convenient on the production line and for the user. In military packaging it has done away with some of the heavy grease coatings formerly used to protect metal parts.

This method, because of its protective qualities, its convenience in handling, and its semi-visibility, will doubtless be carried over into the industrial field to some extent for such jobs as the packaging of spare parts for automobiles, farm machinery, etc.

There will also be a peacetime place for what is known as the Method II pack, in which a machine or appliance is placed in a water-vaporproof barrier with a quantity of desiccant such as silica gel inside to absorb the moisture.

In terms of its peacetime possibilities, this method will doubtless help to reduce losses due to corrosion damage, particularly in export shipping and storage, for such products as electric motors of all sizes, sewing machines, office appliances, precision instruments, sporting goods and the like.

Many different kinds of wrapping materials were developed. Some have become known as Ordnance Wraps, each of which has its specific purpose and its exact specifications. Their properties include such features as low water-vapor transmission, flexibility, greaseproofness and, in some cases, transparency. Some of them are moldable, many of them seal by pressure, others are heat-sealing. Most of them are quite tough and durable. To some extent, they will continue to be used in normal commerce, but obviously peacetime needs won't be as great as wartime demands. The item of expense is one to be considered, also—protection and service at whatever cost is an essential war aim, but not for competitive commerce.

New types of case-lining materials also appeared in response to war needs. One of these was a lamination of crepe paper and asphalt, the paper creped in such a manner as to be flexible in all directions, and it is tough, water-resistant and pressure-sealable. This is only one of many that have appeared, representing different price brackets and different properties. The export shipper will have no trouble in selecting a particular material for a particular job, with prices corresponding to the properties he needs.

There are numerous four-, five- and six-ply laminations of metal foil with various kinds of paper, together with acetate sheeting, asphalt, and plastic coatings. These types of sheeting may be fabricated into bags, packed into shipping containers, and heat-sealed. Their makers are pretty generally determined that they shall retain a place in the sun.

Paper has been playing a dramatic role. Not only have fabricators of paper packages developed some amazing new protective constructions, but paper technologists, too, have been willing to tackle any problem put before them. Was there a call for wet-strength paper? They worked out the process for putting melamine into the beaters to impart that quality at moderate cost. To meet the needs for papers with low moisture-vapor transmission, they developed a number of different coatings. Was there a demand for nontoxic qualities, or was heat-sealing a requirement? Those were both easy for the technologist. How about a paper or a lamination to make a bag that will retain gas? I'm not so sure about that, but I wouldn't say it is impossible. Papers are being coated, too, with waxes of various kinds for the packaging of dairy products, bakery goods, frozen foods, chewing gum, cigarettes—every conceivable kind of product. Waxes are also being applied to paper packages by the dipping method, and are even being used in the form of an emulsion to give longer life to citrus fruits.

A coating method and material of which you will be hearing more because of its unusual sterilization properties has recently been developed by the Rare Metals Institute of California. Using minute quantities of silver in dispersion, this coating—according to careful scientific tests—affords protection against the development of mold in packaging material. Use of this process, however, may be limited by the supply and cost of silver.

War needs called a rude halt in the use of plastics for many types of packaging. Decorative applications particularly were forbidden. But materials development and molding skills have been progressing steadily. Soon these facilities and materials will be available for peacetime uses, and you may not have very long to wait. Prior to the war, many package uses were discovered for plastic films like Pliofilm and Saran; they proved so useful in military circles that they promptly disappeared from civilian packaging. Their decorative qualities, of course, were scorned by the military; but when these materials become available again for commercial uses, there will be a new appreciation of them for both decorative and protective reasons. It is possible, too, that you may see reductions in the prices of some of the plastic compounds.

One new type of plastic package has been giving a good account of itself in military service and I think there is no doubt that it will find an important place in peacetime packaging—the plastic blown bottle. Will it displace the ordinary glass bottle? Perhaps you can answer that question by asking another: Did the plastic tumbler displace the glass tumbler? No—it found a new field of usefulness and events proved that there was room for them both.

Meanwhile, the glass people have been developing tougher and lighter glassware. You would gasp—as I did—to see a glass jar deliberately dropped on a metal floor in a glass plant. Quite naturally, I expected to see it smash into bits. It didn't.

The future of both glass and plastic containers will depend on several factors, among which are: fitness for a particular packaging job; relative packaging cost which the selling price of the product will stand; and to no little extent, the intelligent selection of proper materials by both buyer and seller.

No review of war packaging would be complete without giving important mention to that lusty and capable war-baby, the weatherproof shipping container. It just had to come and it is a product of the cooperation of government and industry, working together to turn out something that would

Two of the speakers get together. Left, William F. Cullom, director of sales, films and foils dept., Celanese Plastics Corp. shared the Tuesday A.M. spot with Christopher W. Browne, Editor-in-Chief of MODERN PACKAGING.

do an unusual and highly important job. Of course, it cost more, but—for the job it did—it was worth more. What the future holds for it will be told you tomorrow by someone well qualified to talk about it.

An important step in the handling of shipments was made when the palletizing and unitizing methods were developed by the Navy. These methods involve the use of standardized shipping containers for convenience in stowage and the system has resulted in saving time as well as increasing efficiency. You may expect these practices to carry over into civilian commerce—and they won't displace anything else, either.

No one knows better than the packaging machinery man that this war has been one of machines. He was first in the packaging field to be drafted for military production. Just at present he is drawing a long breath between jobs, reconverting from war work and preparing to carry on with production for commercial purposes. In many instances, his production facilities were subjected only to minor modification, so in most cases his reconversion job will not be too difficult. However, he has a big backlog of orders and if you get delivery soon you'll be very lucky.

Engineering hasn't stood still. It won't be long before the machinery fraternity will have some important announcements to make.

This has been a very superficial and sketchy review. You can't dig very deeply into the matter, however, before you are tremendously impressed by two things: (1) the importance of the contribution made by the entire packaging field to the war effort; and (2) the enormous advances that have been made in packaging materials. As a result of the war stimulus, package planners from now on will be offered a wider choice of materials than ever before. Some fear that this means a battle. I don't. There will, of course, be a return to good old healthy competition—and won't we all welcome it? But I am convinced that this wider choice of materials means instead an opportunitity to do more and better packaging.

During the war period, very properly the emphasis has been on protection; I don't believe we will ever lose sight of its importance. Fundamentally, in peaceful commerce as well as in war production, the job of the package is to keep the product in good condition during every step of its journey from producer to consumer. And so our first measuring stick is the selection of materials that will do a *protective* job.

But there will be a return of some of the old measuring sticks which perhaps have been temporarily out of use during the emergency. One of these is the consideration of cost. While our Forces were battling all over the globe, it was right and proper to disregard cost and get the goods to them. Possibly also some temporary selling at a loss (to keep brand names alive) may be justified. But either one would make a poor permanent rule for commerce. We can't do what certain Government "experts" suggested and fix a uniform percentage of cost for packaging regardless of the product, but we must keep our package cost in proper relation to the nature of the product and its unit price.

Another measuring stick that will return is regard for the consumer. For quite a spell now, all sellers have been able to thumb their noses at the customers. The conditions of a seller's market are not healthy for business. They won't last. Packagers will do well to look forward to the return of normal conditions and prepare their packages with the consumer in mind, in matters of convenience, identity and beauty. This definitely indicates the return in a big way of attractive design. The designer, too, has been progressing; he realizes that he must enlarge his scope to include structural and protective counsel as well as art, typography and retail store considerations.

For that matter, our biggest intangible gain is the realization that package development is a team-work job. Formerly, if a company had anyone in charge of packaging it frequently was somebody who had grabbed hold of one corner of an idea and ran away with it, knowing only that one corner and not understanding all the angles of packaging nor realizing the importance of coordinating them. Now we know that a good package is *not* the result of a flash of genius, but the product of analysis and compromise, of concern to every department of a business. The research department must tell what the characteristics of the product are and what protective qualities the package must have; must assist in making tests of materials that provide those qualities. The purchasing department must furnish information about the availability of those materials and insure their proper fabrication and delivery. The production department must tell what kinds of packages will lend themselves to efficient and economical production. The legal department must be consulted to make sure that the package and particularly its labeling will stand up before the cold scrutiny of the Food and Drug Administration. The sales and advertising departments have contributions to make in matters of package size, copy content, colors, market considerations and consumer acceptance.

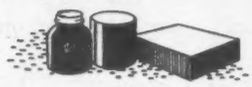
The packaging field may well be proud of what it has done for the war. But undeniably the war has done something for packaging too. It has brought a wider public and official recognition of the values of packaging. It has stimulated the development of new materials, giving us an immense variety from which to choose. It has forced us to learn new processes and methods with the result that we now have a "know-how" equal to any packaging task. It has brought into sharper focus the standards of evaluating package functions. It has left us with the finest opportunity we have ever had to perform a peacetime packaging job for the best market we have ever faced. It remains for us now to meet that challenge on the road forward.

PRESIDENT DODD: Mr. Browne talked a little bit about costs. I am just wondering if he would say more about this matter of cost.

Margaret Griffin recording the speeches is a familiar figure at these meetings. She has been recording them for many years.

MR. BROWNE: I think the time is going to be ripe quite soon for a very significant study of the cost question. We recall the study that the Wharton School made, sponsored by the Container Corp., in an attempt to find the economic justification for packaging. The study was undertaken at a rather unhappy time because we were just moving into war shortages of both manpower and materials. And so the results were, unhappily, rather inconclusive.

Not long ago I saw a machine for carton closing: one machine that was operating at the rate of seventy per minute taking the place of a line of fourteen girls that had formerly done the same job at the same rate. I think increased efficiency of machine handling is going to be a partial answer to the cost question.



Combinations of Flexible Materials for Packaging: WILLIAM F. CULLOM, *Director of Sales, Films & Foils Dept., Celanese Plastics Corp.*

The perfect packaging material has been made! That is not really true. But it is nearer realization than at any time since the Egyptians packaged mummies.

There have been so many improvements these last four or five years. You are all going to benefit by those improvements, whether you are manufacturers of raw materials, manufacturers of products, retailers, regardless of your particular occupation.

I think it is perhaps quibbling on terms a little bit, but I do not quite agree with Mr. Browne on one point. He mentioned new materials. I do not think there is such a thing as a new material. There are new combinations. There are new applications. Such things as polyethylene or vinylidene chloride have been known in laboratories or have actually been used in small quantities in the past, but never produced in quantity and never used in any quantity. Many of them have come to the fore in these last four or five years. But not really new materials. Adaptations. Your ingenuity in combining those things which have been known to you or known to science for these many years.

Price, as always, is going to be a factor in the continuation of these materials. Perhaps the greatest push on any flexible material has occurred in regard to aluminum, lead and the other alloys of foil metal. Most of us have seen the dehydrated coffee or soluble coffee through extract which has been used by the armed forces in every corner of the globe. Aluminum foil, however, for most packaging needs reinforcement with another material to give it ductility—something which will hold up the microscopic pores which exist in the foil. In due deference to any of the aluminum foil people who might be in the audience, I do know that it has been made without any pores. But, from all reports, it is also very expensive at the present time.

Aluminum foil has a very low coefficient of expansion and contraction. The desire is to get something on that material which is not going to distort the package or is not going to pull away from the foil in the variations of temperature, humidity and refrigeration. The coefficient of expansion and contraction of acetate is as low as any of the thin transparent packaging materials. When I say low, I mean 0.0088 down to 0.005. The ductility is there so that the foil is not going to break.

An interesting variation of acetate on the outside or transparent flexible material on the outside and a vinyl butyral spray coating on the inside, which is normally used to effect the heat seal, would be an unsupported vinyl film. Let's say 0.0088 to 0.005, laminated to the inside of the foil. There you have your ductility. There you have an excellent media to effect your heat seal, a fact based on tests which have been made. The heat seal has been found to be better than a spray coat 30 lbs. per ream of vinyl butyral. Thirty pounds a ream of vinyl butyral represents quite a cost and it can be investigated by those who are interested in hygroscopic products, dehydrated soups and things like that for the peacetime era as a means of doing a very desirable job.

True, you cannot see what is inside. And there is a terrific emphasis on visibility. But you do know that what is inside with your name on it is going to be an enjoyable product when it gets to the consumer.

Vinylidene chloride, rubber hydrochloride, as Mr. Browne pointed out, have been admirably used in Method II pack for airplane motors and things of that nature.

ANB-20 is the specification under which a lot of this work was done. Those who wrote it all would recognize that there were certain disadvantages: One was the materials in the product; the other was the equipment on which it was made. There is always a search for a better means, or another means with more readily available material, to package airplane engines. 150 vinyl unsupported film laminated to aluminum foil was the answer. It was approved very shortly before August 14. You are familiar with the various combinations. I guess the widest publicized was Metalam 140, which is vinyl laminated to aluminum foil and heat-sealed over the engine. True, you cannot see any desiccant; you cannot see any humidity indicator. There is no necessity. It is sealed properly. Moisture will not get in that package and it will never affect the motor or whatever the part might be on the inside.

Mr. Dodd mentioned the quantities of packaging material that are going to be available. Some of us want to get started now, some for the Christmas line, and some to come out right after Christmas. Materials are all being made. With few exceptions, restrictions are practically off thermoplastic materials. There is a big back-log of orders in everyone's file. And the entire industry cannot supply the total demand at this moment.

There is going to be interesting competition in regard to case liners for export shipment, postwar. Those of you who have exported appreciate the metal liners or the metal sheaths which you used prior to the war to protect your product, folding it over on the top. Is that necessary? That increases tare weight very materially and there are combinations of material now available which will do that same job and reduce tare weight.

Flexible combinations for garter boxes, ties, belts are coming back. We all knew them before the war, where you laminate the complete unit, make the folding box, have the window there for the display of the merchandise. That same laminating idea is being used at the present time for locker papers.

As you all know, there are many transparent materials on the market. This one employs one particular set of characteristics and another one another set of characteristics. Waterproofness, greaseproofness, dimensional stability, laminated to something which is known to be stable, will give you a locker paper which does a very admirable job in the preservation of meat. All I can say now is that further work is under way.

Pressure-sensitive tape was used in conjunction with these laminated wraps for the sealing of hundreds of packages. It was used for the identification of packages—shells which were shipped up to the front. That same idea is going to be carried over.

There have been many tests on soft goods in self-service and clerk service. The demand for displayed merchandise nationally advertised is increasing. Shop wear is reduced. Inventory control is speeded up. Protection plus trans-

parency has for many years been known as a stimulus for sales.

Retailers are tremendously interested in folding window boxes, set-up window boxes, completely transparent wraps and over-wraps. It was news to me to talk to some of the people in mail order houses, for instance, and find out really how little they package. And how much they want to package. Curtains are a perfect example. Mail order houses store them in bins. When you want a pair of curtains, they go in and pull them out, fold them up and put them into a box. That takes time and takes money. Most of them are soiled when you get them. That sort of thing is going to be changed. That is where they will reduce the spread between manufactured cost and the retail price.

Fresh food—there has been more written, to my knowledge, in the past year on the correct packaging and preservation of fresh food than has been written in the last ten or fifteen years. Last week in Milwaukee I called on a firm there which is perhaps one of the largest commission houses in the Mid-West.

This company was vitally interested in the idea of taking in carlots of merchandise and pre-packaging that merchandise, getting rid of all of the culls, giving the housewife a package which is ready for actual use in her kitchen. The proper materials and proper refrigeration are going to increase shelf life, and meat-counter bottle necks can be eliminated. They have used printed wraps, window boxes, overwrap trays, overwrap trays with labels adhered to the outside or with labels stuck in underneath.

The super-markets, which, perhaps, have gone further on the West Coast than anywhere else in the country in prepackaging, plan to spend something in the neighborhood of $400,000,000 for modernization and equipment for complete self-service—which self-service is not going to be limited to food. It is going to include soft goods and it is going to include hardware, drugs, cosmetics. It is a tremendously large market.

Most everyone considers transparent materials, heavy transparent materials, semi-flexible or rigid, as glamour material. They were before the war.

Bendix Aviation required a package which would be tamperproof and visible from at least one end. They finally decided on a paper spiral-wound sleeve, about 2 in. long, over which a waterproof, spiral-wrapped acetate outer jacket was placed. The acetate jacket was roughly 1/4 in. longer than the paper tube. Acetate discs were put inside the acetate sleeve resting on the paper liner and an ordinary spinning operation was used to fold the acetate down on the discs and give a package which was tamperproof. You could see from either end, but you could not open that package without destroying it. You do not have the rigidity you have in metal or glass, but you achieve waterproofness, protection from the paper sleeve, visibility from the end as desired.

Fire bombs required plastic parts for ignition. The production requirements were beyond anything that the packaging industry had ever known. Automatic drawing equipment was built to make these parts. That equipment produced these small containers or ends for containers at rates up to 100 and 120 per minute. Will this drawing equipment be available to the general public? Only in 1946. They are not going to make the large packages that most people want at this time, but they are going to make a small package at a cost which will be lower than anything that has been known in transparent packaging in the past.

Even the new era that we are approaching has incorporated thermoplastic material. Controlled splitting of atoms, the atomic bomb, in its production or in its actual function, has employed formed cellulose acetate parts. How, why, when, or where, I do not know. I am not able to say. That will be an interesting story when it comes out. So that we run the gamut from the foods that you eat to the atomic bomb which is now a reality and perhaps these few items that I have discussed, plus the thousands and thousands of items that you know so much more about than I, will prove that we are on the road to finding out the secrets known to the Egyptians those many, many years ago on the banks of the Nile.

QUESTION: What is the likelihood of the development and increase of pre-packaging of consumer items for retail sale in the light of increased costs of such new packaging?

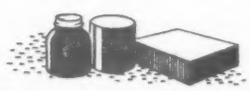
MR. CULLOM: There are some figures available. You are familiar, perhaps, with Lloyd Stouffer's very excellent article in MODERN PACKAGING* very recently regarding some tests that are being conducted in the Mid-West. The actual cost figures on the experiment, as far as I know, are still held within the organizations conducting the experiment. When they will release this information I cannot say.

QUESTION: Has anything in a transparent material been developed for the packaging of liquids?

MR. CULLOM: Pliofilm and several of the vinyl combinations have been used experimentally. There was one application before the war—pickles, where you had actual liquid in the package. That was done successfully with Pliofilm. Oil has been packaged in vinyl copolymers and kept around the packager's laboratory for long periods of time.

QUESTION: Has there been any standardization of transparent containers, with specific reference to rectangular transparent containers, as has been the case in the set-up cardboard box industries?

MR. CULLOM: To the best of my knowledge, the answer is no. There are a few large fabricators of transparent containers. The greater majority are small manufacturers and there has been very little done to standardize sizes, weights of material used and costs on those boxes. There are two companies at the present time working on automatic equipment to make set-up boxes.



TUESDAY AFTERNOON

Packaging Problems Clinic—a panel session. *Chairman:* ALBERT W. LUHRS, *president, Container Testing Laboratories, Inc. and vice-president, AMA Packaging Division. Panel members:* E. H. BALKEMA, *director of packaging and printing, Colgate-Palmolive-Peet Co.;* GEORGE N. GRAF, *director of merchandising, Quality Bakers of America, Inc.;* F. S. LEINBACH, *assistant to the general manager, Riegel Paper Co.:* CARL E. SCHAEFFER, *sales manager, packaging division, Stokes & Smith Co.;* J. H. TOULOUSE, *chief specifications and service engineer, Owens-Illinois Glass Co.;* MARTIN ULLMAN, *industrial designer;* R. V. WILSON, *director, customer research division, Continental Can Co.*

CHAIRMAN LUHRS: We have gathered here quite an imposing group of men who know a great deal about the various phases of containers and packages.

The first question that is before me, and which I think Mr. Schaeffer can perhaps answer, is a short question: Will new

* "Packaged Produce," July, 1945, pp. 89–95.

Albert W. Luhrs, president, Container Testing Laboratories, opens Packaging Problems Clinic, a panel session.

models of packaging machinery be made for higher production speeds?

MR. SCHAEFFER: Yes, I think there will be new models made. Just how soon is very difficult to say. Generally speaking, package machinery can be divided into the semi-automatic and wholly automatic classes. In the semi-automatic the speeds are about 15 to 20 per minute. In the automatic, they are 30 and 60, and up to 120 per minute. In the liquid filling, they go up to higher speeds; up to 300 or more per minute.

Now, it must be remembered that the more automatic or the more high speed the machines are built, the less flexible they are. Usually the high-speed machines are single-purpose machines. They are not adjustable for various sizes, although they can be made changeable in a number of instances.

We recently heard of a machine being developed for going up to speeds of 800 per minute. That is a machine for wrapping the citrus fruits. It was developed by Goodyear Tire & Rubber Co. I believe if Mr. A. B. Clunan is in the audience, he might be willing to say just a few words on that machine.

MR. CLUNAN: There has been developed in the last year or two, and is now completed and in operation on an experimental basis, a machine which will wrap oranges transparently at the rate of 500 to 800 a minute. I have seen the machine operate at 800 a minute, and it does a very successful job. It employs the thermoplastic idea, with a material like pliofilm which stretches a pre-heated film around the orange. It does not do it, as you may judge, by individual operations, but by putting the oranges through in gangs. That machine is ready for commercial operation just as soon as our product is again available to the market.

QUESTION: Is there a possibility that the cost of plastic bottles will approach the cost of glass bottles postwar?

DR. TOULOUSE: We have in plastics of the types suitable to blow into bottles a material from 15 to 50 times the cost of glass as a raw material, and we have not yet learned how to blow those (although we are experimenting in them now) at any speed approaching that of glass. So, I think the approach will not be very close for a long time to come.

QUESTION: What new contributions can packaging make to self-service merchandising?

MR. GRAF: There is a tremendous future for self-service packaging in meats: packaging to make a contribution to preserving the color. Packaging can make tremendous advances on the complete packaging of produce. In self-service, the need of buy-appeal in the package is pre-eminent, more than it ever was before. So, packaging should have appeal in design. The need of better appeal and design is even greater. There is need for utility and function. The Coca Cola package is a good example: the household package of six bottles. It is a tremendous advance in self-service.

QUESTION: Do you know any material that is not water-soluble that can be used to stabilize edible wax emulsions impregnating paper? I am thinking of an emulsion that has so little water-soluble material that the present emulsion is very unstable. No further water-soluble material can be used.

MR. BALKEMA: Recently there has been a new group of materials introduced that would answer this question: oil-soluble and water-insoluble and very surface active. As low as 1% added to paraffins will stabilize them in very small aqueous solutions. These same materials are also of interest in other phases of the packaging field. They have been added to inks at the time of grinding, and the natural result was more even distribution of the color. And also, there have been tests made with these materials when added to the beater on pigmented papers, and it gives a better distribution of the color and finish of the papers.

QUESTION: Will the newer materials and methods, a knowledge of which has been gained through war usage, result in changes of Rules in the Consolidated Freight Classification?

CHAIRMAN LUHRS: We all know there have been a rather considerable number of materials and methods developed during the war, and I have little doubt but that some of them will be reflected by changes in the Consolidated Freight Classification. There have been developments in containers, such as improvements in bags, combinations of veneer with paper, the weatherproof corrugated and solid type of "V" boxes, etc., which will certainly result in changes in the rules.

QUESTION: Is there any information available as to the probable rate of tin production from Malaya and the Dutch East Indies? How about our stockpile?

MR. WILSON: The United States is unique with respect to tin, in that we have no possessions in which great quantities of tin are produced. As you probably know, the bulk of tin is produced in the Malay States. The condition of the mines and equipment is not known. A commission of the Netherlands and British Governments is in all probability on its way down there now. The Japanese control has been relinquished. To my knowledge (and I did look at the newspapers this morning), there has been no report from that commission. There are

From left to right, Martin Ullman, industrial designer, and R. V. Wilson, director, customer research division, Continental Can Co., members of the panel of packaging experts, listen while a fellow expert explains his point.

some indications that considerable quantities of refined tin may be found.

Any definite prediction as to when we might expect tin, or relinquishment of M-81, would certainly be futile on my part. We do know that regardless of the situation, with the increased demand for tin in the automotive industry, the refrigeration industry and others, that certainly we must be careful of the stockpile that is left, and considerable conservation of tin must be carried out for some little time to come. We could not expect to get a normal supply from the Malay States much short of six months to a year at the very best.

QUESTION: Has anyone had any experience combating the use of transparent paper on foods via more color and more attractive design on opaque paper?

MR. LEINBACH: I believe we only have to look at the average shelf in a grocery store to see that a great many designers and a great many packagers depend upon color on an opaque background. I should say that they have had a lot of experience. I believe that would indicate that whoever uses those things has found that they can use color on an opaque background on their product to more advantage than they can use transparency.

MR. ULLMAN: I know of two instances where transparency has been an advantage and a disadvantage. One is on choco lates, for instance; the transparency was working in a negative manner, and by means of redesigning the elements that went on the transparency, the amount of visibility was reduced, the transparency was used as a means to an end (as a material) and also as a merchandising weapon.

The other instance referred to underwear, and transparency was being used by everybody in the trade, and this particular manufacturer changed from one material to another (from transparency to an opaque covering of cardboard). It did increase his acceptability by the trade in opening up more outlets and also increased volume on the particular numbers the new packaging came into effect with. The new package was copied by a great many of the competitors in the trade.

MR. GRAF: I would like to ask Mr. Ullman, do you think that transparency has a saturation point? In other words, when enough products of similar nature are in transparency in package, and the novelty has fallen off it in that particular field, might there be a tendency to go back to other forms of packaging?

MR. ULLMAN: No, I think, first of all, the novelty of transparency has already worn off in most instances, but I do believe this: that when we begin to learn how to use materials, as materials, we will be able to use transparency to greater advantage than we have ever done before. And there is no such thing as a saturation point in materials.

CHAIRMAN LUHRS: I have already warned Dr. Waring of the Davison Chemical Co. that we are going to ask him to answer this question:

QUESTION: How can Method II on dehydrated packaging be adapted to give merchandising appeal to products other than foods? How can this method of packaging be an asset to improve distribution?

DR. WARING: Method II is a term which has come into use exclusively for military packaging. However, it is not a technique that arrived with the war. It had already been in use by many of the largest exporters, such as General Motors, before the war.

Briefly, it consists of the use of a moisture-vapor barrier, a material which acts as a barrier to the passage of even minute quantities of moisture vapor, plus a desiccant, such as silica gel, which is a chemical substance having the ability to absorb moisture out of the air. Now, it depends on its usefulness, on the fact that if relative humidities are maintained below a value of 30%, corrosion will not occur. Consequently, it has been used in military packaging largely for metal parts.

However, one of the points which I want to establish is that in the postwar field it is not confined to metal parts, the reason being that low relative humidities not only prevent corrosion, but they also prevent many other chemical changes which are damaging to products other than metal. For example, in the field of textiles, a low relative humidity will prevent the formation of mildew or mold or other similar organic growths. It will also prevent the tarnishing of silver, and consequently has an application to luxury items like tableware, jewelry, and items of that nature.

Transparent barriers can be used in connection with this technique, to build eye appeal and sales appeal in much the same way as they have in the past, but with the specific adaptation to materials which require a low moisture content in order to enable them to be preserved adequately.

We feel that there are two main difficulties facing wholesalers and manufacturers with respect to postwar distribution. This is particularly true of highly engineered products, expensive instruments, electrical equipment, refrigeration equipment; all sorts of things which have a high degree of engineering built into them and on which a certain amount of factory or installation service is necessary.

First of all, there will be keen competition for good distributors and distributors will be in a position to pick and choose from the manufacturers whom they represent. Naturally, they will want to distribute products which can be installed with a minimum of complaint and with a minimum of customer trouble.

Secondly, there will be difficulty in securing skilled men to service and install complex equipment of this type.

Now, the Method II packaging comes into the picture in this respect, because it enables a manufacturer to take a complex item of equipment, such as, for example, an hydraulically controlled and operated machine tool, establish all factory adjustments at the factory, package it by dehydrated packaging so that no heavy slushing compounds, no cleaning, no depreserving, is necessary and send it to the customer in such a way that all you have to do is to open up the moistureproof envelope and plug in the electrical controls, with complete

factory adjustments maintained throughout the shipment. That, we feel, is a very important item, and it is applicable to a tremendous variety of products.

Those of you who have been experienced in this method of packaging during the war may have had the idea that it is expensive packaging. In many cases this was true, although percentagewise the cost has been relatively low. For example, it might cost $50 to do a machine tool which was valued at $15,000. Fifty dollars is a lot of money for packaging, but on a percentage basis of $15,000, it is really a very small item.

However, the point which must not be excluded is that the cost can only be considered from the over-all picture. Included in the costs should be the savings which are made in fewer returns of damaged products, fewer difficulties with shopworn or displayworn material, fewer difficulties with servicing and installation and, last but by no means least, the saving in labor involved. It may be said that in Method II packaging there is no labor required for cleaning—when that saving is credited against the total over-all cost, in many instances the packaging method shows a tremendous saving rather than an actual out-of-pocket cost.

QUESTION: What should the attitude of management be relative to the requests of customers for a reduction in the gross weight of shipping containers? Will management be forced to absorb increased packaging costs owing to the demand of the trade for smaller units?

CHAIRMAN LUHRS: It seems to me there is not much the manufacturer can do about it. I think if the customers want it, they will probably get it, even though the manufacturer could add that extra cost (if any) to his manufacturing cost. He certainly would want to charge extra for the product which he ships in those small units.

On the other hand, it is not necessarily true that because the shipper of the goods is faced with an increased cost the total cost of distribution on that particular item, from the time it is made until it is used by the ultimate consumer, is increased, because in many instances, even though there might be a slight increase in container cost or handling cost in the manufacturer's plant, there will be a very considerable saving in container and handling cost on the part of the jobber or the wholesaler or the retailer. And, as an evidence of the truth of that statement, I think I need only refer you to the large increase which has taken place in unit packaging in recent years.

MR. BALKEMA: In our business, we try to hold the weights on all shipping containers down to a maximum of approximately 40 pounds, because we have found that if we go higher than that, our customers talk to us about rupture cases. Now, as far as management goes, in absorbing increased cost due to the smaller packages, where the manufacturer sells to wholesalers I do not think this is too big a problem, but where the manufacturer desires to get wide distribution and sell direct to the retail trade, I think that he will be forced to assume the increased charges due to the smaller package.

QUESTION: How soon will private designs return after the release of L-103?

DR. TOULOUSE: It has been said that the glass industry has no reconversion problem because all it meant was a change of molds on the machine. Now, that is true, but the making of those molds presents a problem. We would have to make molds with the use of iron that is still hard to get, made by men who still are not returned to us. Most mold design shops are from three to six months behind on their orders right now.

A return of private molds means another thing. It will mean a slowing down of production. Now, in one sense we are not selling the John Jones Co. a thousand gross of bottles. That is, when he comes to us now for an order we're not saying that on January 6 we will be able to make John Jones his thousand gross of bottles. What we are really saying is that on January 6 we will be able to give him, say, 22 hours' machine time. If he elects to take a bottle design which is made at a slower rate, he may get, in those 22 hours, only, say, 800 gross or 700 gross. It will mean, at that time, a reduction in the number of containers that he can get to take his goods to market. Now, that will mean that private designs really should be held off until such a time that the glass industry is able to absorb more orders, or until they lose enough other business that they are able to take on these orders.

QUESTION: We have a tremendous problem of packaging for transportation from bakery to grocery stores. Ideal systems, of course, provide for only one cake deep with some sort of nesting containers. The disadvantage of this, of course, is the tremendous amount of space it takes in trucks and of handling costs.

MR. GRAF: I would say that every bakery in America is looking for a solution to that. We have used, naturally, fiber boxes, and woven wood and metal, but none yet, to my knowledge, is entirely satisfactory. Perhaps the newer metals, the aluminum, may come through, or magnesium, if not too expensive. But there is a tremendous field for development.

QUESTION: What is available to industry in siftproof cartons? Has any progress been achieved through the use of adhesives on regular cartons?

MR. BALKEMA: Well, like Mr. Graf, I would like to know the answer to that, too. At the present time, most cartons are closed by means of glue and the water in the glue causes a short flap to curl and this is further accentuated by means of your pressure belts. Now, there have been a lot of different types of so-called siftproof cartons developed. But, to date, we have not yet seen a really simple siftproof type of carton. On the other hand, the regular tight-wrap package known to all of us has consistently demonstrated its siftproof properties.

QUESTION: Will the increased output of plywood result

Left to right, Willard F. Deveneau, sales promotion mgr., National Folding Box Co., E. H. Balkema, director of packaging and printing, Colgate-Palmolive-Peet Co., and Charles C. Rossotti, executive vice-president of Rossotti Lithographing Co., Inc., go over some of the finer points of the panel session during after-meeting get-together.

eventually in its increased usage for postwar packaging?

CHAIRMAN LUHRS: I believe that it will. The plywood manufacturers have expanded their outputs; there have been some improvements in the adhesives to make the plywood more resistant to moisture, and also more resistant to fungus and mold growths. So, I think that the plywood container has been improved, made even better than it was before the war and I think that the increased output of plywood will result.

QUESTION: What is the future of electro-tinplate and chemically-treated plate?

MR. WILSON: Electro-tinplate, I think it is the general consensus of opinion, is here to stay and it has an excellent future. The improvements that are made in the speed of production and the uniformity of coating during this war period very clearly indicate that it does have a future, that in all probability we can get plate which is equivalent to the old hot-dip plate, and possibly better, with considerably less tin on the plate.

The so-called Bonderized or chemically treated plate has a future somewhat questionable. At the moment, in its present state of development, it is necessary to cover that bonderized coating with an enamel. Unless they can reduce that cost, I think its future is very definitely limited.

QUESTION: How much effect does attractive packaging have on sales where the product is shipped directly from the manufacturer to the industrial consumer? In the final analysis, is not the customer more interested in the product than in the packaging?

MR. ULLMAN: At all times we are interested in the product, more than the package, except the fellow who is selling the material or the fellow who is designing the package. In so far as the effect on the trade of industrial package redesign is concerned, there are any number of instances. I know of one in the dental field where it took five laggers in the line and stepped them up because, prior to the redesign, only two numbers were carrying the burden of all the sales.

QUESTION: What are the possibilities of the new foil wrappers? What types of printing will they take? What wrapping-machine speeds? No matter how good the foil may be, is it not true that when it is bent it gets pinholes that destroy its value?

MR. LEINBACH: The possibilities of the foil wrapper seem to me to be unlimited. It is an excellent barrier against moisture vapor; it has an excellent place in combination with other materials; it has long since been proved in a great many fields in packaging.

I know of aniline printing on foil, of rotogravure printing and for a long time, of course, foil was printed by oil plates and letter-press. I do not know of any work that is being done with offset lithography on foil. I believe that is actually one thing on which the foil companies are working rather intensively to see if they cannot work something out.

Wrapping machine speeds? That is like saying, "How high is up?" Chewing gum machines wrap 600 sticks a minute and I see a new one is announced for 700 sticks a minute, using a paper-backed foil. However, if you had in mind how fast can you make a heat-sealed bag, for instance, from a combination of, let us say, cellophane, foil and 50-lb. kraft—well, you know about time and temperature, and you must give the heat time enough to get in there to make the seal. It depends on how fast your machine runs, and, I am sorry, there is no answer to that one.

As far as pinholes are concerned, I think that is a popular fallacy which should be exploded. If you take the area of a package and the area of the pinhole, there is a direct relation between the loss of efficiency of the foil barrier. And if you do not believe me, take your own moisture-vapor transmission testing equipment and take a sheet of good heavy-gauge foil that has no pinholes in it (and you are absolutely sure of it) and put a small one in, and then take another reading and see whether it really does lose all of its efficiency. It does not, and the amount that it loses depends entirely upon the number and the size of the hole.

QUESTION: I understand some users of glass containers are developing acceptance tests. How about it?

DR. TOULOUSE: Some of the users are and it has been a very good thing, because when those tests were agreed upon between the manufacturer and the user they met on a common ground. However, writing specifications for an acceptance test is not a job for an amateur. I would say that if one is contemplating an acceptance test, he should base the quantities and procedures both on the methods of A. S. T. M. as a standard test for glass containers used there, and also on the Army Ordnance Tables of sampling.

QUESTION: What progress has been made in the elimination of odor of vinylidene chloride flexible films?

MR. LEINBACH: I know only one manufacture of a polyvinylidene chloride flexible film. I may be wrong on that point. However, I do not know of any progress that has been made in removing what I would term the characteristic odor and I believe you should be referred to that particular manufacturer.

QUESTION: Are there any new developments in glass for the armed forces that will be released to civilian use?

DR. TOULOUSE: I would say none, because those glass containers that were suitable for the armed forces' use were practically the same as those used for civilian use.

QUESTION: What about cost of new machines?

MR. SCHAEFFER: Well, believe it or not, I think the costs of new machines are going to be higher, whether we like it or not. My estimate would be that you can expect anywhere from 5% to 10% increase in cost, because I believe all the machinery people are about in the same boat with everyone else; generally, the labor cost has gone up about 35%.

QUESTION: Will package economies be an important factor in the trend toward lower distribution costs?

MR. GRAF: Very definitely. Any economy that can be made between the time the product is produced and the time it is consumed will help distribution costs, which can be devoted to more selling pressure or a lower selling price. Of

Mr. Luhrs, left, hears a few off-the-record opinions from H. A. Wolsdorf, director of sales research, Package Research Laboratory, in the center, and J. D. Malcolmson, who is the technical director of Robert Gair Co., Inc., right.

course, there is one factor in this question of economy that you have to keep in mind: there is an invisible asset in that any package that serves its function better and, as a result, sells more goods may make a greater reduction in distribution cost than another package which will actually cost less.

QUESTION: What new trends are evident in the packaging of frozen foods? This is, in relation to usage in the home freezer unit.

MR. WILSON: The trends in packaging for retail are certainly toward higher speeds and lower labor costs. There are new packaging machines for the cartons that have been used. There are new composite fibre-metal containers that will be used for the retail package.

QUESTION: Have there been any recent developments to produce a flexible film which possesses the transparency of cellophane and also has lower water-vapor permeability than cellophane or possibly prewar pliofilm?

MR. LEINBACH: There has been in use during the war this polyvinylidene chloride flexible film, which, to my knowledge, is just about the most moisture-vapor resistant film, particularly under the stress of folding, that has been developed. I think the regular vinyl films have not been particularly successful in the field of moisture-vapor resistance. Their qualities, I think, fall in other fields.

QUESTION: Is there anything new in bottle protection to prevent loss of valuable contents?

DR. TOULOUSE: Yes, not only experiments that I am familiar with myself, but in other glass companies, the use of a plastic film, usually by the evaporation of the material from the solvent on the surface of the bottle. At the same time a considerable amount of work has been done on a so-called unbreakable, or tempered, bottle.

QUESTION: Will all white bread be wrapped in cellophane instead of wax paper after the war?

MR. LEINBACH: I think it might be well to point this out: A bread wrapper serves a number of functions. It's got to retain the moisture in the loaf so the loaf is fresh; it's got to give sanitary protection; it's got to enable slicing so the baker can slice the loaves and the wrapper will carry all the slices in a single package; and it also has a very important function, of course, of having a good, appealing exterior. Well, now, cellophane does all those things well. There is no fooling about that. There are a lot of other things that do them too. Some of them are not so expensive as cellophane and some of them, I suppose, are more expensive. I believe that sheer factors of economy if nothing else will keep the thing this gentleman had in mind from actually happening. I do not believe the difference in cost (and I know I am on dangerous ground) will allow this to happen in every case. Certainly, it will be more widely used; I will admit that.

QUESTION: Manufacturers now supply the industry with a variety of liner facings which experience indicates are needed to cover product requirements. Some concerns find it necessary to use several different liners in each size cap, and are compelled to carry possibly 60 different caps where about 20 should suffice.

MR. WILSON: I do not think we have found the ultimate answer we have all been looking for. We have been seeking that Utopian liner for years.

MR. BALKEMA: We have not found any all-purpose liner. We would like to find one, believe me.

QUESTION: How long will it be after V-J Day before we may expect to obtain corrugated shipping cartons of prewar quality?

CHAIRMAN LUHRS: I think an improvement in corrugated

The distaff side was represented. Left to right they are Bernice Thompson, designer, Raymond Loewy Associates, Adele Peters, Devoe & Raynolds Co., Inc. and Rose Puppo a member of the packaging division of E. R. Squibb & Sons.

boxes is already noticeable. I think it is safe to say that by the end of the year most container manufacturers will be making boxes up to their prewar quality.

QUESTION: Has the consumer become more conscious of packaging values through experience in the war period?

MR. GRAF: I will say she has. Did you ever have a cardboard toothpowder container to wrestle with, especially if you are a traveling man?

QUESTION: Are the machinery manufacturers going to bring out new models of packaging machines, and how soon?

MR. SCHAEFFER: The answer is yes, and when? I will say I think they are all working on new models of machines. However, the machinery people are right now booked up with a backlog of orders which have been dammed up since wartime without priorities. I do not think you will see very much in any new models of machines for at least a year or a year and a half.

QUESTION: What would you suggest as the most approved method of pre-testing new label and package designs?

CHAIRMAN LUHRS: I will ask Mr. Graf to comment on that first, and possibly Mr. Balkema, and Mr. Ullman, or any of you gentlemen, after Mr. Graf.

MR. GRAF: Well, I do not know what is the most approved method generally. I can tell you how we try to do it. First we take our dream child and try to put it to all the tests and the checks that we know of: functionally, use and strength and so forth, and design; and call on the backlog of previous experience; generally submit it to any executive who has a preference, or whose wife likes red, or something of that sort. Next our procedure is to try to get it to a consumer jury. We test it for quick flash reaction there, to check our viewpoint. And then, finally, we take a segment of the market and actually make a market test.

MR. ULLMAN: What we do in our place is to make the actual dummies, and there are usually two or three ideas presented as approaches to a problem. These dummies, are tested out with the people who constitute the buying market. That is done in conjunction with the previous package, and also with the competitive packages; in other words, giving the consumer or the testing market a decent representation, so that they can say, "I prefer A, B or C." And if a dummy, which is nothing but a handmade job and has a lot of bad surfaces and angles to it, can come through, it is pretty safe.

QUESTION: Do you know of any developments in packaging equipment which will give a deep-sealed vacuum package, using flexible film liners?

MR. SCHAEFFER: There has been quite a lot of develop-

ment work. Just how much publicity can be given to it right now I am not at liberty to say. But several companies have done some research work on vacuumizing flexible packages. We can just say that it is very much in the wind right now. How soon something concrete will come of it, I cannot say at this time.

QUESTION: If prewar containers are manufactured starting with about the first of the year, will it not be necessary to have changes made in Rule 41?

CHAIRMAN LUHRS: The Classification Committee is seriously considering what its next step should be toward changing Rule 41, either back to where it was many years ago or back to where it was a few years ago. Nobody knows, though, just what they are going to do. Now it is a fact that freight claims have increased tremendously. Claims in 1944 had gone up to $57,000,000, as compared with $40,000,000 in 1943 and $32,000,000 in 1942, and $22,000,000 in 1941. But how much of that is due to inferiority or decrease in quality of shipping containers is another question. And the general feeling is that the cut in the quality has not been responsible for any more than a comparatively small proportion of an increase in claims payments. As a matter of fact, changes in the rule have not made any substantial difference, in my opinion, in the quality of the boxes. The rule has changed from a caliper to a weight basis, but that is about all.

QUESTION: Isn't it the consensus of opinion that the rule ought to be written on the performance of the box or package rather than certain specifications of the package?

CHAIRMAN LUHRS: Many men have considered that that would be the desirable thing to do—to work on a performance specification rather than a specification which has to do with physical characteristics. But it is difficult to arrive at these performance standards. I think that is a matter that will not be decided for a long time.

QUESTION: Has any container been perfected which will allow the electronic cooking of foods after the thing has been closed?

MR. SCHAEFFER: I know that one company has been experimenting, but I know nothing of the results of the experiment.

QUESTION: Back in about 1938 the Heinz Company put out its famous pickle in a liquid package, in which the Pliofilm bag was afterward inserted into an open-faced folding carton; and at that time it was freely predicted that they expected some part of the canning industries, especially in the vegetable end, would commence to pack that way because of the savings involved in that bag plus the carton as against other methods. I have not heard any more about that since, and I have been very much interested. I wonder if anyone could tell me anything about it?

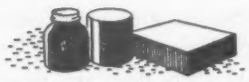
MR. WILSON: I think there was a man by the name of Birch on the West Coast who developed this package before the war. Whether or not he disposed of it is something I do not know.

Possibilities for processing a flexible container like that are very definitely limited because unless you limit yourself to acid products, the non-acid products require a rather high process—that is, 10 or 12 lbs. of steam, which in turn usually necessitates the container withstanding that.

MR. SCHAEFFER: I think any of those developments on flexible packages were held up on account of the war. We all know that Pliofilm use was restricted and that stopped it for the time being. But I think there will be more work done very soon.

QUESTION: In working with plastic caps for bottles, is anything being done to improve the physical impact resistance of the caps for bottles as large as a quart or more?

MR. TOULOUSE: I think a great deal is actually being done because one of the fundamental tests of a plastic cap is its resistance to impact for the various types. Of course, during the war we have not had the quality we have wanted to get. We have had to use more fillers. We had to forget about being "choosey" about the plastic materials we used. All the plastic manufacturers are working on that now, and I think all of them consider it as one of the most fundamental of tests.



WEDNESDAY MORNING

Chairman: H. H. LEONARD, *president, American Machine & Foundry Co.*

Postwar Packaging and the Designer: JAMES HARLEY NASH, *industrial designer.*

The first factors to consider in the creation of a package are its size, shape and material composition—that is, whether it shall be glass, tin, cardboard, cellophane or foil, etc. This is not only the problem of the designer but also a joint problem of the manufacturer's production department and its equipment, their sales department, their advertising department, and their home economics department.

In many cases, competition has established the size, shape and material to be used. However, if the product is entirely new, the production department in conjunction with packaging machinery engineers should develop the most economical, practical package to hold the quantity which the sales department, the advertising department, and the home economics department collectively think they can sell.

There are packaging engineers, outside of the package machinery companies, who devote their entire time to making better, more efficient packages. However, you will find that packaging machinery manufacturing companies have as fine engineers as are available. Their experience, knowledge of filling, efficiency and economy are so far ahead of any staff I might employ that I always accept their judgment and this policy has produced excellent results.

For obvious reasons, existing machinery largely influences the size and shape of the package. In most cases, the character of the product indicates the packaging materials. Here again, is a problem for the production department.

Sometimes I am asked to change the proportions of a package to compete more favorably. This leads me to say that I am a designer and not a scientist and do not possess much technical knowledge in any field. Bottle shapes can be designed to create larger optical size, greater convenience in use, or re-use, etc., but after designing this basic shape, I prefer turning it over to a glass manufacturer for advice from their engineers in practical production.

Packages are designed to sell the product. If an impractical package shape is created, such as a bottle that is hard to fill, or one which will probably break while filling or shipping, it merely makes the selling problem harder by increasing the production cost and thereby increasing the selling cost.

On the other hand, it is useless and shortsighted to cut costs to the detriment of the delivered product. A better package pays off.

Packaging shapes, sizes and materials are a constant study.

During the war designers were compelled to do things which had never been attempted before and some of them worked. With the rationing of cardboard and packaging materials, savings were effected that enabled us to put out the same number of packages with less material.

Usually, the manufacturer comes to the package designer with a good product, in a practical package and solicits his services to make the package sell itself—on the shelf—in competition.

However, he has other obligations to the designer. He should always know his competition and see that the designer is thoroughly familiar with it. Even a new product is going after a market which is being satisfied to some extent by other products.

If it is a redesign job, the package has certain competition weaknesses which must be explained to the designer if he is to be expected to overcome them.

In some fields, certain trade or market idiosyncrasies accepted by manufacturers should be told to the designer. For instance, it has always been considered bad policy to show a particular breed of dog on a dog food package. Red pepper sells best in red and green color schemes. Dry mustard sells best if it looks like Coleman's.

The manufacturer may have had trouble reproducing appetite-appeal illustrations on the stock he could afford, or at the speed he must print his labels. His labels, perhaps, must be produced in combination runs because it is the only practical method of producing them at a satisfactory cost. Possibly a cellophane window should be considered. This is the kind of information a manufacturer should give the designer and which they should thoroughly discuss, before the designer can intelligently begin to design, or redesign, a package.

Every manufacturer, by experience, should know how to sell his product and his sales department probably knows the weaknesses of the present package. The advertising department may have new sales angles which they would like to have incorporated in the new package design. The production department may want to use other materials for better protection, or for economy. These, and many more requirements of the package design, should be supplied to the designer, by the manufacturer.

By this time, with this procedure, the size and shape of the package, the outside wrapper, the salient selling features, have been determined, in the order of their importance. With the proper cooperation of the client, no friction has yet developed. Now the designer must reconcile the wishes of the advertising and sales departments with the production department.

Another vital factor is where the product is sold. Let us assume that the display is in a store. If so, general practice, created by the dealer for convenience, or other practical purposes, establishes a fairly definite location in the store. For example, cereals, soaps, canned goods, etc., all have a prescribed location and a typical method of display in a grocery store. This factor should be thoroughly studied by the designer.

Some fantastic figures have been published about sales increases created by redesigned packages. This is more than pretty pictures. It is the tangible result of a careful study of both manufacturing and selling problems.

In the past, many manufacturers have overlooked these fundamental facts about their packaged goods. But the war has made many manufacturers more package conscious. When you have a product and no package, or inadequate machinery for increased production and no priority, you begin to dig into the details of packaging costs and effectiveness,

Designer James Harley Nash speaks on the way to get the greatest usefulness from the employment of professional designers.

cuts in paper and board, and increased sales possibilities.

Now postwar competition suddenly looms up. Everyone realizes that with new equipment, new products, and new materials, there will be wild scramble for each $1.00 the family has to spend.

Advertising agencies are suddenly taking a very keen interest in the appearance of the packages they are going to have to sell in postwar competition and the agency can be very helpful in setting up the objectives of the package.

In creating package designs, a consideration is how they can be tied up with other advertising media. The long "F's" in the Duff's Ready Mix packages, for instance, have been successfully used in small newspaper space with a quick tie-up to the package.

A package design with distinctive features can be described quickly in radio spot advertising. Some day television will be another advertising medium calling for a distinctive package.

After the objectives of a package have been determined, the designer should show the manufacturer how these objectives can be presented in an attractive manner, with character which will establish memory value, with display value for shelf competition, practical to produce on the material available and with the method of production that is indicated for that particular package.

If you are able to recognize any package, it is not due to a particular treatment, or style, but rather because of the approach to a problem. With all essential elements that need emphasis, question every symbol or design to see if it really improves the package. Avoid decorations and try to use the same effort and money in selling something about the product.

I have had district salesmen say, "I think our design would be improved if it had a red line across the top." This is not in the jurisdiction of the district sales manager. It is his job to decide what will help him sell the product, and it is the designer's job to design it. If he doesn't like the approach to the problem, because this or that is not brought out strongly enough or because something important was left off, then we should start all over again. But it is the designer's function to decide if a red line is important.

With this approach, you will admit that we are not selling art. We are merely using art as a means to sell products. The personal taste, likes and dislikes are eliminated.

If the designer you have selected cherishes a round package when your machinery makes only rectangular packages; if your producer condemns your designer's work; if the sales department is unhappy, you have selected the wrong designer. This does not condemn the entire designer profession. Maybe your are selling potatoes, and you have selected a designer of beautiful perfume bottles and labels, because you hoped your potatoes would look like that. That designer may be the best in his field, but still not be qualified to handle your job.

I want to point qut another important feature in package design. Unless the sales force is thoroughly happy with the new design and willing to promote it enthusiastically, it will

fail. The package is the selling tool of the salesman; he must have confidence in it and feel that it really will help him to overcome some of the sour grapes on his route.

Sales may not increase 60% because of a change in color on a package. But the change in color and design will pep up the sales force and give them a new lease on life.

It has always been a mystery to me why a manufacturer buys advertising space to tell his customers the virtues of his product and then repeats the display face on the back of the package, and puts a note on the bottom, "Write for free recipe booklet."

The display face of the package has a function. The sides have another function on the pantry shelf, where space is limited. The back of the package is just that much free advertising space to tell the consumer how best to use your particular product.

I have had presidents of companies bang on the table and say that their packages were indelible on the minds of the American public. I then have asked them how many years they had been president of their company—thirty-five years. How many packages a year have been produced during those thirty-five years—300 million a year. All of this was to impress me with the fact that a change in design was completely out of the question. After this harangue, I have asked them to draw the face of their package. They couldn't draw. Well, all right, you describe your package to me and I will draw it. This is where it suddenly dawned on them that even they, who had seen millions of their packages a year, didn't know what was on the packages. In some cases they didn't even know the color of the printing.

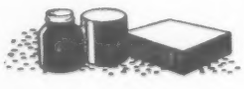
I predict that we haven't scratched the surface in packaging. With all the effort being devoted to their study, good package designs will become increasingly essential to industry and the consumer.

QUESTION: I have been trying for several years to get some opinions on the relative advantages of letter-press versus lithography in label work.

MR. NASH: Certain subjects can be done better by letterpress, I think, than by lithography, and vice versa. But frequently, in competition, the size of the sheet may be the controlling factor.

QUESTION: How far should the manufacturer of the larger, multiple-unit package go to duplicate the attractive label on the smaller unit package? What is your reaction to the concealment of the attractive small package?

MR. NASH: From my standpoint, a display box (which is what you are talking about) should be a display box, and should display these packages. If you had a white package, you should not put it in a white display box, from my point of view. It should be a contrast. Therefore, do not ask that display box to duplicate the label. You can use that inside label by a window of some sort.



Present-Day Packaging Machinery Problems: C. A. CLAUS, *vice-president, New Jersey Machine Corp.*

All of us machinery manufacturers have been confronted with confounding problems resulting from the terrific war through which we have been.

When this war came upon us we had—.

First, the freezing of all machine orders.

Then, secondly, priorities were granted for certain orders which were for essential industries, helpful to the war effort. Those that were not had to be cancelled and forgotten.

Thirdly, following close behind the second phase, came the scarcities of materials. In the scramble to order sufficient materials for those machines that could be built, everything went into the list as "unavailable."

Fourth, came material allocation so that no one manufacturer could get it all.

Fifth, many of our plants were forced to convert and build machines absolutely foreign to our own line, wherein we were required to satisfy customers whom we had never served before and to drop our normal customer trade. This period lasted the longest of all.

C. A. Claus, vice-president, New Jersey Machinery Corp., tells the machinery manufacturers' plans for postwar packaging.

Sixth, came a releasing of priority control, allowing for the placement of orders without priority—orders which, however, could only be filled after the priority orders had been satisfied, and

Seventh, by September 30, 1945, there will be a release from all previously issued priorities, with the exception of the "AAA," which is an emergency regulation. There are two new types of priorities to be issued, one called the "MM," equivalent to the "AA1," which is for military materials essential for the carrying on of occupation etc., and the "CC," equivalent to the "AA2," which is for civilian conversion for those machines most needed for reconversion back to normal. These latter items are the ones which are going to insure re-employment; placement of returning veterans in business or the re-establishment of a business obsoleted for war measures and export needs.

In short, this is, in part, that through which we have been. In addition there has been the general shortage of employees and the resultant drop in efficiency of the average factory employee, and the loss to the armed forces of key men in the organization.

Let us look at the situation confronting us at the *present* moment.

First off, the help situation is little, if any, better. The labor laid off by other war plants and the adjustment and placement of these into our own plants is going to take time and effort in training.

Secondly, replacements for lost key personnel are insufficient, inefficient, inexperienced and hard to handle; in many cases a critical blow.

Third, customers' machines have been running two and three shifts a day, many times without adequate stops for cleaning and oiling to maintain them. Many old, obsolete machines have been put back into service with subsequent breakdowns which, altogether, has resulted in a call for replacement parts far exceeding any previous record.

Fourth, with depleted engineering departments the possibility of bringing out the new designs and machines anticipated, or of making those changes in existing machines found desirable from experience gained in the war, cannot be executed for some time to come.

Fifth, motors are one of the most difficult items to procure. Delivery now being quoted on standard motors is 56 weeks.

Sixth—and this apparently is critical to all the machinery manufacturers—is the procurement of castings. The foundries have been hit very hard. It takes at least three years' experience to make a good moulder. It does not appear that the grey castings situation will be relieved for some time to come.

Seventh, material costs are up over 10% and labor costs as much as 35% over what they were in 1941. Generally there has been no increase in the cost of standard *machines* since 1941. Price increases on machines are inevitable.

Eighth, in a survey made of the package machine manufacturers' plants, it appears that all have a tremendous backlog of orders on which it is impossible to make deliveries in what the customer considers a reasonable length of time. The quotations being given at the present time show that deliveries are anywhere from 6 to 25 months from date.

Ninth, one of the most disturbing factors is the request from customers for information as to when shipment of their machines will be made. While some minor executive of the plant is checking up on the foundries, suppliers, etc., for this shipping information, that individual could be using his time productively rather than obtaining information which, when obtained, again, is never accurate.

It is my desire to show the particular position into which the package machinery manufacturers generally have been placed and to effect, so to speak, a reconciliation between the package machinery manufacturer and those whom we serve so that the best might be gained in the reconversion period through which most of us have had to go or are still going.

By nature, packaging machinery manufacturers are accustomed to looking forward. We visualize better days and better ways of accomplishing routine tasks.

We know that you all appreciate that we are pleading a case, pleading it so that our good customers and friends may understand that *none* of us are slighting them in the least. No one is being "kicked around"; we are trying to do the fair and honest thing for all of our good friends, but we realize that it's difficult for them to understand this serious situation.

A customer who had been waiting 12 months for his machine, recently sent us this wire:

PLEASE TAKE THIS TELEGRAM AS CANCELLATION OF ALL ORDERS ON FILE WITH YOU COVERING THE PAST, PRESENT AND FUTURE

Gentlemen, if this is the sacrifice we must pay for patriotism, we are happy to do so.

Here is how the customer may help in expediting shipment of machines:

Have a little patience and understanding and avoid repeated requests for shipping information.

Transmit to your supplier just as complete information as possible on all details of the problem of packaging for which he is building a machine for you.

Tell how you now do the work—whether by hand, automatic or semi-automatic machine, or special gadget made by yourself—and specify speed desired.

Send plenty of testing materials and check to see that they are correct.

Do not order equipment just to get on the books with a view of possible cancellation later on.

Requests for information special devices or changes on standard equipment and devices are difficult to take care of because of shorthandedness. Special equipment and devices are a long way off.

Do not seek devices or machines to handle materials not commercially available at present.

Get a good mechanic. He can save many productive hours for you and much unnecessary expense. You don't know how discouraging it is to machinery manufacturers, even though his services are paid for, to send a serviceman many miles just to tighten up a few screws or find the correct adhesives to use in order to obtain proper operation.

When good mechanical attention is lacking, order slower-speed, simpler machines.

Minimize the number of sizes of packages you want to handle on your equipment. This will help to simplify the machine and minimize the amount of time necessary for testing prior to shipment of the unit.

Set your plans leaving a *maximum* amount of time for delivery of your equipment.

Now the whole job is not up to our customers. There are many things that the packaging machinery manufacturers themselves can do to help solve the problems that confront us. Here are some of them:

Follow Elmer Wheeler's advice by saying that soft, sorrowful, "No" to those demanding the placing of an order for special equipment that will break up or delay your production of standard machines so sorely needed.

Concentrate production on a few models to permit larger lots to be put through at one time.

Organize a night shift as men become available.

Spend less time on filling in castings and simplify painting to one-color jobs.

It might be prudent for the Packaging Machinery Manufacturers Institute to look into the procurement of a foundry for its members' use.

We should prevail upon the motor manufacturers to increase their capacity for turning out fractional horsepower motors.

Determine as soon and as accurately as possible, the probable delivery dates of those machines on order and advise your customers accordingly.

Everyone would wish to have something new developed that would do their job more efficiently. We all realize that we have not been able to carry through new developments together with the war work that it has been necessary for us to do. Therefore, these anticipated higher speeds and greater efficiencies are for tomorrow and not for today. You can help by supplying the standard machines available and by keeping the item as standard as possible for the time being. By tolerance on the part of both of us and by mutual understanding of our problems we are sure that, as Alvin Dodd says, "The road back is the road forward."

QUESTION: When priorities are abandoned, what standing will the customers have who never had priority ratings?

MR. CLAUS: We wrote the Priority Board in New York and asked them that question. They said that you will maintain the same rotation of orders that you had prior to the institution of priorities. No actual statement is made in the Priority Manual, and it is not indicated, so far as I know.

Modern Materials Handling and Warehousing Methods: COMMDR. BOYD R. LEWIS (SC) USNR, *Bureau of Supplies and Accounts, Navy Department.*

In our organization in the Navy, and because the two are

very closely allied, packaging and materials handling are under the same executive direction. One is dependent on the other—good packaging takes into consideration the handling to which the container is to be subjected—and poor handling will destroy the *best* of containers.

Materials handling as an engineering science *before* the war was relatively new. Unlike packaging, it came to the U. S. Navy as an infant; as a fundamental science it had just been born. The Navy took this infant and brought it up to full growth with the power to meet emergencies and peak loads—to move tremendous tonnages with a minimum of cost and manpower—to move all kinds of materials.

The Navy had a materials handling problem of a size which staggered most of us when we thought about it. For the first time in the history of war we had to work on both ends of a five to seven thousand mile supply line—we had to keep the combat ships fueled, provisioned, loaded with ammunition and ready to contact the enemy at any time. Our problem at its peak is indicated by the following figures: We were moving by rail, air and water 4,000 carloads or 100,000 tons per day. This is a total of 120,000 carloads or 3 million tons per month. Sixty thousand to one hundred thousand carloads of necessary war materials were moving at all times. This meant 1,500,000 to 2,500,000 tons were *rolling at one time.*

Materials handling and warehousing methods were the subject of the speech made by Commdr. Boyd R. Lewis, Wednesday A.M.

There just *had* to be a solution to this tremendous problem of the movement of materials. Here is the the way the Navy solved it:

No. One: Mechanized handling—and using the right equipment for the job. In this manner we did away with the handling of *one box* at a *time* by *one* man; and we handled fifty to one hundred boxes with one 110-lb. girl and one machine.

No. Two: The establishment of a uniform Navy materials handling program so that all activities would be operating on the same standards. We standardized the pallet size—its design, material and method of manufacture. We standardized equipment and the training of equipment operators. Standard methods of warehousing were introduced—and we standardized, in the Naval activities, on shipping containers which would fit our standard four foot by four foot pallet.

No. Three: We had prepared at the Naval contractor's plant a unit load which we carried clear through to that tiny island in the Pacific—the advanced base. It was handled as a unit—into the freight car at the contractor's plant—out of the freight car at the Naval Supply Depot—into storage at the Supply Depot—and when requisitioned, out of storage into a freight car or to the docks—into the hold of a vessel, and at the advanced base, out of the vessel into storage—from which it was finally broken down and issued for use. Gentlemen, that meant a lot to us. Had we handled one hundred tons of provisions in the old way it would have cost us 682 man-hours; but, handled this way, we did it with only 203—a saving of 479 man-hours—a gain in man-hours of approximately 71%.

No. Four: We palletized or unit-loaded all inter-depot shipments. This saved time for the originating activity as well as the consignee.

No. Five: We instigated the proper stevedoring methods and equipment. Wherever possible, we discarded the cargo net for handling boxed material. *Pallet slings* came into existence and replaced this antiquated device. Throughout our stevedoring operations we were able—even though the pallet of the unit load would take up some space—to get more tonnage into a ship.

Let's see what the Navy's standardized materials handling program produced for the Navy in this time of emergency:

First—*It gave us speed of action.* From reports from one of my officers come some very interesting figures. In one instance 225,609 tons were shipped by truck in unit loads; it took 3,223 man-hours to unload this material. Had this been done by the old method it would have taken approximately 90,243 man-hours; thus we saved 87,020 precious man-hours, or 10,879 eight-hour working days.

Second—*We saved man power:* and, gentlemen, I am sure that you all appreciate that our problem in the Navy was the same as yours (on a larger scale); we did not have enough men to do the job. But here, don't forget what the 110-lb. girl did when given the *proper* equipment.

Third—*We saved in money.* Demurrage was cut to a minimum. Space was utilized as effectively and efficiently as possible.

Fourth—*We saved in equipment.* Trucks made more trips—rail cars were not tied up waiting to be loaded or unloaded (except for a minimum amount of time)—and, best of all, the turn-around time of ships was decreased. We saved from three to five days in unloading a ship at an advanced base by using the unit load principle and modern materials handling methods—and, therefore, we needed fewer ships.

The question now arises: *How can this new engineering science be applied to your own business?* When you return to your own plants, may I suggest that you consider seriously the materials handling principles developed by the armed services in the war just won? To whet your appetites, may I give you a few instances of materials handling as it existed in American industry before the war?

A study of a certain pipe foundry showed that 61 tons of materials were handled for each ton of pipe that finally left the shipping room door. In a plant manufacturing agricultural implements, 180 tons of material were moved for each ton of finished products shipped. Some authorities say that the average for American industry as it was before the war, is at least 50 to 1. You and I know that this is much too high.

How are you going to tackle the job? That is going to be hard because this is a new relative engineering science. There are not too many people who know the intricate details, and few people are qualified to tackle a materials handling survey of a large manufacturing establishment. However, there are some firms of good industrial engineers—engineers from equipment manufacturers' plants—who can help you. But you are going to have to decide yourselves from the information gained from these sources just what broad policy you want to follow.

May I suggest that before making any drastic change you make a complete scientific study of your problem; and when you settle on a policy, be sure that in all of your plants, if you have more than one, there is uniformity of equipment and uniformity of method and procedure.

The chairman, H. H. Leonard, president, American Machine & Foundry Co., greets members attending Wednesday A.M. session.

Be sure that the most modern thinking goes into your plans and that you have streamlined this phase of your business as well as you have streamlined your production lines and methods.

QUESTION: Explain the preparation of the glued unit load.

COMMANDER LEWIS: The glued unit load came because of the fact that steel strapping had gotten down to where we could not get too much of it and we could not get it very easily so someone had to devise someway of keeping this load together.

The most simple unit loadable material is canned goods and corrugated or solid fibre shipping cases. When the case has been filled with cans from the casing machine, it goes down from there. At the end of the conveyor is a small pan of glue. The case running over this has deposited on its bottom little strips of glue. Well, when the man picks the case up and lays it down on the top in conformation with the design that we have given him, he does a brick-wall pattern. So, you get a tie and a bind, and the whole job stays together.

QUESTION: Would it be advisable to use glue to reinforce unit load, providing steel strap is available?

COMMANDER LEWIS: Well, it works. Either of them will do it, but be careful in picking your commodity. You can get assistance from manufacturers of adhesives, and you can get assistance from our own officers in the field.

QUESTION: Have unit loads of 55-gallon light-gauge drums, and 100-lb. bags been prepared and used for carload shipments?

LIEUTENANT BUBB: I believe the Naval Supply Operational Training Centre at Bayonne have made some experimental shipments of bagged material. I think Lieutenant Roberts may wish to further amplify what shipments were made.

LIEUTENANT ROBERTS: We have not made any shipments of 100-lb. bags, but we have made shipments of 50-lb. bags containing sugar and a cloth bag with a laminated liner for coffee.

The first trial shipment was the multi-wall bag in a short trip from New York to Bayonne. The carload was received at Bayonne and there were about 48 bags per pallet. And in the entire car of 36 unit loads there was not one bag that had torn loose or been broken loose from the unit loads.

This particular bag was a five-wall bag with three asphalt layers. Glue will not penetrate the asphalt layers during shipment; therefore the maximum amount of tearing was on only the outer layers.

The cloth coffee bag was also a 50-lb. bag. The first shipment was made from Brooklyn to Bayonne. The material was received without a single bag being dislocated. There had been considerable difficulty previously in attempting to steel-strap bags of material very apt to shift. In the unit load, shifting still existed. The sacks shifted down about six or eight inches, but the glue bond was still intact. The bags were separated at Bayonne to determine any damage, and there was absolutely no damage to the cloth bag. Also, there was no defacing of the information on the outer bag; i.e., the printing on the bag.

QUESTION: Has a four-way pallet been developed and is it now available?

COMMANDER LEWIS: Yes, it is developed and there are many, many developments in pallets coming along. We do not know where it is going to end, frankly. There are three-way, four-way, five-way, and every other kind of way. There are magnesium pallets; there are aluminum pallets; there are steel pallets; there are wood pallets. Single-faced pallets, double-faced pallets. In the near future you will find tremendous strides in pallet design. In fact, you may find paper pallets. I found one fibreboard pallet which worked fairly well. You may even find no pallet at all.

QUESTION: Are there any figures available in regard to the cost of the glued load versus the steel-strapped load?

COMMANDER LEWIS: Yes, very definite figures. I think you had better get those from the steel strapping industry. There are figures, and they know them.

QUESTION: How active will the requirements of the Army and Navy be for packaging materials in the future? And what proportion of materials will be packed for long storage?

COMMANDER LEWIS: I will say this: material will be preserved and packaged for storage, depending upon the type of material and where it is going into storage. It will be preserved in package. There will be considerable packaging materials used by the Navy in the future. All of the equipment that is overseas has got to come back.

An interesting development along that line, of course, is the new packaging unit that is mobile, which is a truck and a trailer and thirteen men and one officer. In twenty-five minutes, it is ready for use.

QUESTION: How much use has been made of the collapsible elastic bag for the shipment of liquids and fine-ground materials?

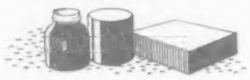
COMMANDER LEWIS: That is not materials-handling, is it? Could I discuss that with you after this meeting? I would like to keep on this materials-handling thing just as far as I can. I will put that in my pocket and we will go over it later.

QUESTION: In general, can forked lift trucks be used efficiently in multi-story buildings? Are they best for use in one-story buildings?

COMMANDER LEWIS: They can be used any place. Of course, you have to lift them up the same way you have lifted your materials up and down. Certainly, you can use them on the fifth floor or sixth floor and load your elevators with them and take them off down at the bottom very nicely. It works out quite well.

I would like now, if you please, to suggest to you that you see the Navy training film on materials-handling. This film was developed for the purpose of training cvilians and officers and enlisted people in the use of the forked truck. Its title is "The Forked Truck," and should any of you care to use this

film, or any of the other films that we have, you may have them on a loan basis merely by writing the Bureau of Supplies and Accounts in Washington, D. C.



WEDNESDAY AFTERNOON

Chairman: N. A. FOWLER, *vice-president, General Box Co.*

Accessory Functions of Adhesives: DR. FRANK C. CAMPINS, *manager, industrial research department, National Starch Products, Inc.*

In addition to their major function—namely, adhesion—adhesives generally perform several accessory functions that may directly or indirectly improve the finished product. Examples of this might include increasing rigidity, increasing production rate, or any of a number of other items.

Nearly all adhesive jobs have their accessory aspects and even the abnormal adhesive jobs are often so only in respect to new or unusual accessory requirements which have to be overcome, generally through new types of formulation. As these new formulating skills enable the extension of these accessory functions to other products, they always have a horizontal application. Perhaps because unusual accessory requirements often point the road to future widening of serviceability, it may be well to list a few of these abnormal requirements to show how they form a part of your normal future use.

I will now bring out one of the secret weapons of all conventions, the cocktail glass, on which you always have the petty annoyance of having dew or condensation form. That arises because of a temperature decrease at the glass interface; namely, the air at that interface becomes saturated and moisture is deposited. Throughout the war years, you have been burdened with adhesive requirements for shipments thrown overboard, that require water-submersion resistance. You have been hampered from the lack of sheltered store space. Throughout the ensuing years, you will continue to be annoyed with a measure of resistance to condensates, which is here to stay, because it exists in sheltered places, sometimes the most cosy sheltered places.

All your bathroom packages are subject to a heavy moisture condensate formation. That means that every package containing any adhesive is then subject to an actual surface wetting operation and such an adhesive should, obviously, be water-submersion resistant.

Now, dew-point abuse exists also well outside of the bathroom. You have it in the freight car, especially where any commodity that gives off a large quantity of moisture, such as potatoes, is stored, because the humidity of the air there is relatively high, and you need only a relatively small dropping temperature to cause dew formation. In an atmosphere say, of 80% relative humidity, you only need a drop in temperature of 7 deg. to cause dew formation. And this 80% relative humidity is easily attained in a closed railroad car.

Another type of dew-point abuse which will be widely encountered will follow in the footsteps of the quick-freeze and the refrigeration industries. You have a package, a little bag, that is used to store ice cream or some frozen food to be put in and out of the ice box. Every withdrawal is a dew-point formation period, in which your container can fall apart.

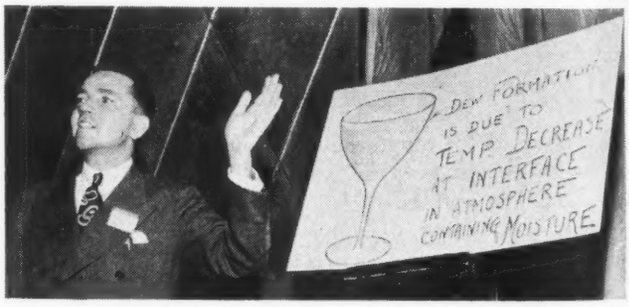
For these reasons, it would behoove packaging men to seek means of protecting against damage to their packages through dew formation. That is a readily accessible commodity today that any reliable adhesive supplier can protect you against.

Another development of accessory function is the problem of temporary adhesion. Now, that sounds a bit contradictory, because when you say you want to stick something, you usually want to stick it for keeps. However, there have been places which act as "come and go stations," where material is repackaged; where, for one reason or another, the container may need to be pulled open without actually rupturing the packaging material itself. Likewise, more recently in the Navy, there was a development of "unitizing" multiwall paper bags, so as to prevent these bags from slipping in transportation. Yet also that material must enable the bags to be stacked over each other; yet enable them to be pulled apart without tearing the sack; and, at the same time, if it should loosen through the jolting of the railroad, it should have a high friction value.

That type of temporary adhesion, has not reached full commercial use up to the present time, but it has been through a few tests in carload lots.

That type of adhesion has been called in the consumer trade "crystalline adhesion" mainly because of the crackle that it makes when you pull it apart. Fundamentally, you can get any degree of failure until you actually approach the flat failure. In other words, this one here is deliberately intended to rupture within the adhesive.

This elemental principle has been fathered many, many years by the type of can labeling which contained a little premium booklet, or some little give-away, where the consumer was intended to pull that off without having it torn to pieces.



Cocktail glass, secret weapon of convention, helps Dr. Frank C. Campins, manager, industrial research dept., National Starch Products, prove point about condensation.

Another type of temporary adhesion which has come to the fore, but which is not new, is the type which is probably called "permanent lingering tack." It is useful for certain types of shipment.

After all, fragile things are always with us. If you took a sheet of cardboard and applied that adhesive to it, your net result would be the equivalent of a large sheet of scotch tape, against which your container could then be placed without tending to slip or move in your package. It acts to hold a lampshade in place or some delicate radio tube, or something like that.

That type of thing has a definite place in the design departments where new packages are created and where you wish to get the look of something and then pull it out and try it some other way to see if it looks better.

That type of product may also lend itself to handling large

amounts of impervious material where a regular adhesive would not have an opportunity to dry, or where the locking-in of water below the adhesive would tend to cause corrosion.

There are several other sorts of accessory utilization for adhesives. I might mention in passing sterilization, but that is a commonplace one, relatively speaking. I might also stress that since adhesive films are generally always protected by two faces, they inspire a certain type of thinking to see what type of barrier or protective action I can get from that adhesive film.

I might mention that film effects (in other words, where you apply your adhesive as a film between two materials) may exert either breather or barrier action.

In terms of breather action, an interesting example is in the lamination of, say, sixteen-point kraft board. If you use an adhesive with very high solids for that lamination and you form a container into which you proceed to pour hot asphalt, the barrier action of that adhesive filling for the onrush of moisture forced out of the paper by the hot asphalt is so great that it will cause rupture of the drum. The remedy there was simply to use an aqueous adhesive with no solids, mainly to achieve discontinuity, or to emphasize discontinuity, of the adhesive film and in that way to secure a large amount of breather action through the adhesive film.

The more common case is where you wish to secure a full vapor barrier, such as is used today largely for packaging certain types of chocolates or other commodities in cartons where you have a moisture-vapor barrier. Now, actually, the adhesive that achieves good barrier action leaves a lot still to be desired as adhesive. In other words, in general they are plastic materials of a waxy character. Their plastic nature implies that they have flow at any low point above their yield point. Consequently, if for any reason the sheet of protective paper that you are using should in itself have a ripple or cockle in the material, and you try to laminate it with a flat material, then that slight ripple will exert a small and continuous force on that plastic material and ultimately open a pocket or delamination zone.

Now, you may say, "What is there to worry about with one such pocket?" Usually the types of material that have cockles have no even location or distribution; they are just all over the sheet. Consequently, if you try to pull that sheet off, there would already be many delaminated zones, so your sheet will just pull right off with no force at all, and you would simply emphasize all the faults that are inherent, generally, in that type of plastic lamination. And actually, the problem is how to make those materials which do have good moisture-vapor barrier action have better adhesive action.

An interesting example from another field is in the case of water barrier action. A film, to have moisture vaporproofness, demands continuity. A film, to have water barrier action, may or may not have continuity. Perhaps that point might best be illustrated if you have a material that is actually water-repellent, then a film of that material need not necessarily be continuous. These diagrams here simply represent surface tension effects for a material that is wettable. Notice how it climbs into the capillary. And for a material that is water-repellent. Notice how it actually does not even reach the level of the liquid. By the same token, if you spray water on that surface which is wettable by water, the water will find this capillary instantly and creep down into it. If, on the other hand, you spray the water on a surface which is water-repellent, the repellency would create this negative capillary here and keep the water out of these holes, except when you have sufficient pressure to force the water down into them.

Now, you may say this sounds highly academic. In point of fact, this type of thinking was behind the development of the emulsion type of labeling and over-coating adhesives to protect labels for the Ordnance Department during the war. This same type of thinking will find industrial application. For instance, to give you a case in point, we have certain types of display advertising where you have a large amount that is relatively thin. Back of that is a layer of a water barrier aqueous adhesive. When rain falls on that material, it does not go through that water barrier, and consequently it does not cause ripple or cockle in this heavy cardboard layer, the resultant effect being that this heavy cardboard can be reused several times.

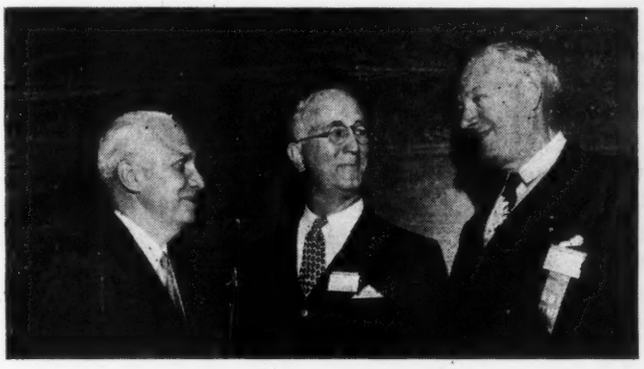
Another possible application, for instance, is the case of toys that are made with paper facings. These toys are on a wooden foundation or on cardboard. If these toys are left out in the open, it is not only water-submersion resistance that is needed, because an adhesive may be water-submersion resistant and still allow water to go through that adhesive. In the case of these toys, the adhesive must stop water from going through. Otherwise, the wood would get all bumpy and out of shape.

I might stress that difference between water barrier and water-submersion resistance; the result of the water-submersion resistant adhesive used for sealing shipping containers for overseas use (V board and so on), as well as the type of adhesive used for fabricating that board, will all provide prolonged submersion-resistance to water, but they will all allow water to go through the adhesive layer freely.

Another aspect is the possibility which has come up from time to time of saying, "Do you have an adhesive that can act as a grease barrier?" If the consumer industry is interested, and the market warrants it, there are adhesive films that dry flexible and would give grease-barrier action. The disadvantage in using an adhesive for grease-barrier action is primarily that your normal paper surface will discolor with the grease, even though the grease may stop at the obstruction. However, there is a type of market that does not care if the inside is discolored as long as the outside looks good.

I may touch on another use of adhesives, where they could act as impregnants, where you are demanding some structural action from them. As a rule, you do not get and generally do not want much structural effect where you are dealing with thin films that have to be laminated together. The bulk of the requirement, to the contrary, is to get flexi-

Between speeches visitors exchange greetings and ideas with AMA officials. Left to right, H. J. Howlett, sec. of AMA, N. A. Fowler, vice-president, General Box Co., and Alvin Dodd, president of the organization have a chat.



bility and to retain the flexibility inherent in the thin sheeting. Where you are dealing with heavy materials, rigidity becomes a demand.

Any aqueous product (because water tends to swell a paper fibre) will not normally penetrate into paper structure to any depth. It may go in to a few thousandths of an inch, but that is all. That does not stop them from being used, because it is better to get some rigidity that way than to get none at all. Now, by and large, the art of impregnation as applied to the rapid processes of paper converting has not to date been pursued with any degree of seriousness. We have a few blossoms (let us call them orchids, because they are rare) that show interest that way.

QUESTION: Is there any effort being made to achieve greater rigidity in the winding of tubes through the use of adhesives?

DR. CAMPINS: There is a fair amount of demand; in fact, there always has been demand for rigidity in wound tubes. By and large you are depending on a very thin film of glue, which means you have recourse only to the utilization of high solids, not only solids dissolved in the glue but also solids conceivably used in the same sense as structural steel is used in concrete. Those are two approaches. Naturally, you can only get a very limited amount of result, but it is still noticeable. And those that are aware of it, stay with it, so it is a commercial difference.

QUESTION: There were coated liners on shipping cases available before the war. These coatings somewhat resembled washable wallpaper and the cases could not be sealed by the machine. Are there adhesives available for this today?

DR. CAMPINS: The developments particularly of emulsion type adhesives have enabled fast and ready adhesion to these relatively non-wettable surfaces. We feel that those cases are likely to come back today with renewed vigor, because they may have a place in the refrigerated food industry.

QUESTION: Has anything been done by the manufacturers of multi-wall sacks to supply a paper bag with a non-skid coating that will not interfere with the advertising on the bag?

DR. CAMPINS: I do not believe there is anything actually on the market. All I can say is that the bag people themselves are seriously aware of the problem. We look forward in the near future to having something transparent and high friction, and at the same time that would give a temporary bond. Then, the next question that they will undoubtedly raise is "How can we put that on by machine at 2,000,000 feet a minute?"

QUESTION: Can you tell us whether the glued unitizing of loads without pallets has been tested commercially for shipping containers and for multi-wall paper sacks?

DR. CAMPINS: Multi-wall paper sacks have been touched on in the unit loading of shipping containers without pallets, and apparently has made a serious dent in the art of packaging or handling fragile materials. The liquor industry have not only gone after it but endorsed it. In other words, they require nothing but a small gluing device that fits into their conveyor, and that is all the equipment needed. The cases are glued together; mainly at the bottom of the cases, you have small strips of glue, and those cases are stacked right as they come off the gluer. In that way, they very often just stack one over the other, with no attempt made to crisscross, brickwall or jigsaw the effect, and the results obtained in transportation have shown such great reduction in breakage that we seriously believe that that art is going to find widespread use not only in the liquor industry where it is already one of the blue-ribbon babies but entirely outside of that in the field of transportation of cans. Because you do get a fair amount of shifting and breakage, I might add that because the adhesive bands are relatively narrow, your cases can readily be pulled apart at destination. I think that the liquor people have issued reports on that. I do not know if they have reached a trade publication yet, but I am relatively sure that they have.

QUESTION: Are temporary adhesives available that can be affixed to multi-wall paper bags at the time the bags are made?

DR. CAMPINS: That one is still, let us say, in the foetal stage.

QUESTION: Are temporary adhesives usable more than once?

DR. CAMPINS: That is a very sound question. Obviously, one type is usable only once; then it is completely out of commission. The permanent or lingering tack product, as long as you have rupture in the film, is usable more than once, until you get a good collection of fuzz, fibre, dirt and other forms of dust on it.

Now, normally, for certain types of tapes you might notice that they put those on a buckram (made of wide-open cheesecloth) lining, as a separator. Well, one purpose of that which might be interesting to mention, is the fact that the adhesive sticks to these little fibres of cloth and that actually when you pull it apart you create fresh adhesive surface and in a sense you tend to reactivate your lingering tack by creating new spots. And, if at every use you could break completely in the adhesive film, then supposedly you could go on and on until you have none left.

QUESTION: What is the time of set under use of emulsion type pressure adhesive?

DR. CAMPINS: That question has meaning only in terms of the surface to which the material is applied. In other words, the more absorbent your surface (if you had type of paper that was relatively non-absorbent as against a type that had a high absorbency) your greater speed would favor the more absorbent material. Now, that question has a secondary implication in that an adhesive can set fast and still have lingering tack, for a few minutes after that, to enable you (in case your production line slowed up) to still come back and slap your flap right down and get away with it. Usually the rate of setting on the emulsion products as a class is higher than the vegetable types or protein types of glues, for the reason that the water in those products is more or less free water and accessible to being blotted out more readily. I like the question because, actually, greater production rate hinges always on greater setting rate and fundamentally one limitation that we have found in trying to develop emulsions is that you could get setting rate so fast that the act of contact between the glue and the absorbent surface was such as to cause the adhesive to set here as well as on the glue-roller; thereby creating a building-up on the glue-roller. In other words, we had actually to go downwards in our setting rate to create glue-roll applicable types. Obviously, if you have a type of application which calls for low contact between applicator and recipient, then you can explore that end of it further.

QUESTION: Has there been a satisfactory adhesive developed that will adhere to pre-waxed or paraffined paper?

DR. CAMPINS: The pre-waxed or paraffined paper problem is practically in the prewar state. That is a sorry answer, but it is the truth.

QUESTION: Should hot or cold sealing of adhesives be applied to wrappers or bags?

DR. CAMPINS: Hot glues do give you the possibility of faster setting rates, but they have application problems which in general call for new types of equipment. I do not anticipate

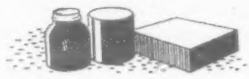
that that center of gravity is going to change either rapidly or soon.

QUESTION: Mr. Balkema, of Colgate, Palmolive Peet Company, complained because moisture in glue caused short top flaps of cartons to curl and kill the effectiveness of the top seal, which has to be made without the benefit of a mandrel. Have you any glue solution?

DR. CAMPINS: There are aqueous adhesives that will not curl flaps, but those products invariably, as far as I know, do not set fast enough to warrant consideration on this job. This thing has a potential glimmer of hope in a remote future, if there is a lingering tack adhesive which could be applied long before and fully dried before your package gets into your zone of sealing.

QUESTION: Hand spot-pasting of labels with aqueous adhesives is plagued by wrinkling and distorting of labels. Has any suitable non-aqueous adhesive been developed during the war years?

DR. CAMPINS: A non-aqueous product which will stick is available, and any supplier can give it to you, if you are prepared to cope with the solvents.



Peacetime Possibilities of V and W Boxes: E. A. THROCKMORTON, *vice-president, Container Corp. of America.*

I am happy to see that the program committee thinks that I may be able to answer some of the very leading questions which are listed in the program. Such questions are hard to answer because there is no definite answer and opinions are relative. Of two things I am sure, and they are (1) that "V" boxes will certainly be used in the postwar era; and (2) that the extent of their use will be limited to some extent by their higher cost.

In the early days of the industry the greatest objection to the use of fibre containers was that they could not resist water or moisture. The enemies of the fibre container were quick to point out its weaknesses, of course, and out of the archives the other day I dug an old book containing some fascinating pictures designed to illustrate the weaknesses of fibre containers—tactfully known during the era as "substitute containers."

The rival manufacturers who circulated these pictures were not being deceptive, even though they may have erred somewhat on the side of exaggeration. Fibre containers just could not stand much water and they had not been improved a great deal during the 1910's, 1920's or 1930's. Their weaknesses were rather overcome by better handling methods in which they were protected from the weather and other hazards to which they are susceptible. I have some pictures here illustrating the condition of military supplies shipped to Iceland when we first established bases there, which are not so far different from the pictures taken forty years or so ago. Since fibre containers were shipped without protection from the weather, they proved about as vulnerable as they had in 1905.

Now, I want to show you a few Army pictures of "V" boxes which have been exposed to the weather and abused beyond imagination, at various advance bases during the recent Pacific campaign.

Everyone knows that there are very few peacetime conditions which will require exposure to such weather and handling hazards, but we know that there have been many other purposes for which fibre containers have been unsuitable because of their lack of weather resistance. The heavier "V" boxes are divided into "V1," "V2" and "V3" grades, and I think all of you will have the impression that "V1" is too expensive or too good for any commercial purpose. I can answer this reaction by saying that some "V1" type boxes, as solid fibre boxes of all kraft construction, were in use before the war for certain types of export shipments, although they were not as water resistant as the "V1" boxes which were developed for the Army. Perhaps the use of these very expensive and specialized containers will be fairly limited, and perhaps this use will extend only into very specialized fields, but one must not overlook the fact that some specialized fields are large in volume in their own right.

The "V2" container is certainly also too good for any miscellaneous uses and far too expensive. It will have applications particularly when modified to be somewhat less costly than the "V2" standard of the Army. In the "V2" container a most amazing resistance to water absorption was made effective by double asphalt barriers which prevented the penetration of water into the center of the sheet, as a result of which the Mullen test and other qualities of the material suffered practically no degradation when submerged in water for long periods. To be exact, the specification, as most of you will recall, is for a Mullen test of 550 lbs. dry and 500 lbs. after exposure to 24-hr. immersion in water. Normally, a piece of container board would retain less than 20% of its strength after such treatment.

As a matter of interest, the real reason that the "V2" principle works so well is not because the asphalt barrier keeps the water out, but because the asphalt barrier keeps the air in, and the air that is kept in the sheet tends to hold the water out. This principle may have considerable significance whether the boxes that are made employing it are called "V" boxes or not.

"Peacetime possibilities of V and W board" makes the interesting subject of the speech given by E. A. Throckmorton, vice-president of the Container Corp. of America.

"V3" and "W" boxes are made in both solid fibre and corrugated styles, and as the most economical of all "V" containers will certainly find useful demands for purposes for which the standard containers have not been completely satisfactory.

Actually a few companies were making progress before the war, introducing water-resistant containers, and some of these early techniques were involved in the creation of the line of "V" boxes, but unless we had had a war, it might have taken 20 years to accomplish the same progress. If you had tried before the war to buy container boards that were as well sized—that is, as water resistant—as the so-called "V" grades, you would have been laughed at. And if, let us say, you made the board in your own company, your production people, I am sure, would have been equally non-responsive. It was the war that forced the perfection of these water-resistant grades.

Wherever there is a situation which fibre containers could formerly not cope with because of their lack of resistance to

water and weather, the situation should be re-examined to see whether these new methods may not be unexpectedly useful.

QUESTION: Do "V" boxes have better stacking strength than regular boxes?

MR. THROCKMORTON: No, not when they are dry; "V" methods have not improved inherently stacking strength, but "V" methods have improved stacking strength performance when damp or wet.

QUESTION: Which are best? "V3" corrugated containers or "V3" solid fibre containers?

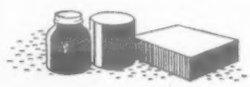
MR. THROCKMORTON: I would say that generally speaking the performance of "V3" solid fibre and corrugated containers is very similar, as evidence by the Army and Navy's putting them in the same classification for most purposes.

QUESTION: Will there be any market for wooden boxes left, in view of the great improvements made recently in fibre containers?

MR. THROCKMORTON: Well, I assure you there will be. There are certain types of things that fibre containers can't do or, if they can do them, they cost more than wooden boxes. Wooden boxes are stiffer, more rigid, and you can get stiffness and rigidity for lower cost, when you go beyond a certain point, with wood than you can with fibre or cardboard.

QUESTION: If the specifications for "V" boxes were written down to the original "V" boxes, would it give a cost level that industry could afford to pay?

MR. THROCKMORTON: The higher cost of the more advanced techniques will depend upon the patents in the few years to come; with normal competitive conditions, we are probably apt to see some reduction in costs of those special materials. And actually, big improvements are possible at very small increase in cost.



Latest Developments in Army and Navy Specifications: H. T. HOLBROOK, *assistant chief, Packaging Branch, Ordnance Dept:, War Dept.*

The situation with regard to materials for war packaging has undergone a very sharp change indeed since July when the program for this conference was first formulated. At that time many basic materials such as microcrystalline waxes, plywood, cloth, etc., were still in short, and, in some cases, in critically short supply.

William F. Cullom (right), shows samples as he answers questions about combinations of flexible materials exhibited during his talk to first peacetime packaging conference.

These shortages were due to the continuing high production of material for Pacific operations, the tremendous demands for redeployment packaging in the European Theatre of Operations and new demands for packaging of returned material and of war reserve material for long time storage. In July, packaging was continuing to capture an immense proportion of the production of the Packaging Industry and at that time, too, the total war packaging bill for this country was in the neighborhood of $300,000,000 to $400,000,000 per month.

In September cancellations have, of course, become the rule, and by this time packaging in contractors' plants is down to a small fraction of what it was in early summer. The prodigious efforts of the Quartermaster Corps in obtaining materials for the Army redeployment packaging program in Europe are nearly completed and virtually all direct Army procurement for barrier materials have been cancelled or will shortly be cancelled.

In European and Mediterranean theatres of operations a complete packaging redeployment program was initiated as early as a year ago. The basis for this program was to provide the same packaging protection for shipments leaving these theatres as was being provided in contractors' plants and in Government depots in this country. Both that equipment shipped to the Pacific and that returned to the states was to be packed in this manner and the result was that the Jersey City Quartermaster Depot and other Government procuring agencies were faced with the biggest packaging procurement project in history.

Basic decisions have not, at this time, been made as to the type of quantity of equipment that will be reprocessed and repackaged before being returned to this country or before being put into storage in Advanced Base Depots. The reprocessing and repackaging program will have to be coordinated with these basic decisions and the latest information available indicates that it will be sixty days before requisitions for packaging materials can be processed through. Nobody can now tell, with any certainty, but there seems to be more than a vague probability that the services will again be faced with a major procurement program.

In addition to these overseas demands there is, of course, the vast quantity of matériel in this country which is being returned from post camps and stations and there is also a tremendous quantity of matériel on hand in depots which may require reprocessing and repackaging.

Among these categories it is safe to assume that many items such as standard automobile equipment, will have a ready peace-time market and will require only a minimum unwarranted expense but would also seriously interfere with its saleability. Other items, such as artillery and small arms spare parts which have little commercial value in peace-time, will be prepared for extended storage and the latest information from the services indicates that the present instructions and specifications will be followed fairly closely in their separation.

Finally there will be those items specifically earmarked for strategic war reserve. These items will include equipment such as anti-aircraft and small arms weapons which the Army will want to "spot" at strategic points throughout the world where they will be subjected to most of the hazards of exposure and handling to which our war shipments were sub-

jected. These will be items which we may need fast and the present thought is to so clean, preserve and pack them that there will be no need for time-consuming degreasing and reassembly operations. These weapons must be ready for shooting on a few hours' notice and around them will be built our first bulwark of national preparedness.*

Just what the specifications for preserving and packaging this equipment will be has not yet been decided. Many of the best equipped and best staffed laboratories in the country are seeking the answer right now and we in the packaging industry can expect some very interesting developments that may be applicable to our normal domestic and export problems.

It seems pertinent to ask what part the Joint Army-Navy Specifications will play in future packaging programs.

There will, of course, be some continuing Government procurement as outlined above and the JAN specifications will continue to form the basis for this procurement.

The influence of the JAN specifications in determining protective packaging of goods to be sold through our regular commercial channels is still nebulous and still very much a matter of personal opinion. It is my opinion that the specifications will continue for some time to have a major influence on packaging materials and design so long as the Services or

Army and Navy specs have been the concern of H. T. Holbrook, assistant chief, Packaging Branch, Ordnance Dept., War Dept., for some time. In the closing speech of the conference he brought the members up-to-date on specs.

some other technically qualified group are willing and able to keep them up-to-date and to make them reflect the latest advances in packaging technology—and so long, too, as those who design and apply packaging continue to recognize that the first function of any package is to *protect*, and no part of that protection can be sacrificed in the interests of any sales or merchandising appeal that may be added later.

Before pursuing this opinion, however, it may be well to review the present status of these JAN specifications. (Here Mr. Holbrook summarized the information appearing in his article "JAN Specs," in the June and July 1945 issues of MODERN PACKAGING.)

Protective packaging, whether for wartime or for peacetime, demands the accomplishment of certain basic standards and criteria of performance. The JAN packaging specifications provide the most comprehensive and up-to-date standards and criteria now available. It is for this basic reason that it is my opinion that the JAN specifications provide the logical basis on which to determine functional package design and package materials for peacetime use.

In spite of all temptation to the contrary, the services, wherever possible and practical, have been adamant in establishing and maintaining *performance* requirements in these specifications rather than prescribing specific materials or combinations of materials or adherence to chemical formulae.

* See "Canned Fire Power," p. 106, this issue.

At many times it would have been far easier for the Services to have demanded—let us say, the use of Saran for all Method II packages or a combination of 44 by 40 fabric cellulose acetate and microcrystalline wax for all production of Grade C, Type 1. To have done so, however, would have required tremendous expansion of some plants and would have completely stifled imaginative development among the vast number of suppliers who have come into the packaging field with the war.

Protective packaging is fundamental to both export and domestic shipments. There is, however, a wide difference between the levels of protection required for each. Even during peacetime little study had been given to establishing levels of performance for export shipments. A few pamphlets had been issued by the Government and other agencies but they were not widely followed and a new exporter, by and large, had to depend upon his own common sense and that of his package supplier rather than on any set of rules and regulations.

Even in the case of large exporters the rule seems to have been to proceed on a "cut and try" basis and to do something about their packages only when the pressure from overseas agents became sufficiently strong.

There are plenty of straws in the wind to convince most of us that this situation will be radically changed in the future. The Marine Insurance Underwriters, the shipping companies and the exporters themselves are now awake to the tremendous developments that have taken place during the war and the value that can be realized from the intelligent application of these developments to normal export trade.

This is bound to be particularly true of those companies who will, for the first time, enter the export field in our anticipated foreign trade expansion program. Many of these have heard, as we have, that very often the difference between the acceptability of American merchandise and competition with British or German, was the difference between the condition in which the merchandise was received. Furthermore, large segments of industry, such as particularly electrical equipment manufacturers, realize that the tools and materials are now available to reduce—if not entirely eliminate—the deterioration of their products on arrival overseas—a deterioration which for many years has been taken a just part of the game, a loss or an expense which was inevitable.

It would be naive to assume that the JAN specifications will be accepted literally for our export shipments. They do, however, provide the only truly comprehensive and reliable

R. G. Macdonald, secretary-treasurer, TAPPI (left), and Maj. James d'A Clark evidently agree with a point just made.

guide and it would be a comparatively easy matter to modify the levels of protection that they provide to fit the kind of handling and storage requirements necessary for normal export shipping.

For domestic packaging, the requirements in the JAN specifications again provide the soundest guide now available for establishing the functional requirements of any package. Great emphasis is now being placed in this conference and in current trade publications on eye-appealing designs, attention-getting devices and speed-up in packaging operations. This reaction from the wartime emphasis on protection—and all else be damned—is only natural. But we must not forget for a moment that the primary function of the package is to get merchandise from our factories into the hands of the ultimate user in perfect condition.

With intelligent modification, again the JAN's can serve the problems of domestic shipping as well as those of export. It may, for example, be feasible now to reduce greaseproof requirements for wrapping materials from 900 seconds to, say, 300 or to shorten the Method IA cyclic exposure test from 8 days to 3. The important thing is that the procedures and tests are established: liberties taken with them can easily be adjusted to suit the product and the cycle that the product will undergo from the time it is produced and packed to the time it is used.

By the same token, the JAN specifications should have a major influence on the producer of packaging materials. To him they provide a starting point from which to explore those fascinating new and hitherto unused coatings and laminations, plastics and foils, and all combinations thereof.

Finally, the principles of performance—the importance of end result—that is implicit in all JAN specifications, provides a common ground on which both buyer and supplier can meet to arrive at the most efficient and most economical package.

For these reasons, it is my hope that a group such as this will give all encouragement possible to the Services to continue to expand the list of specifications and to improve those that have already been issued—and to continue this work until the packaging industry can establish its own technical headquarters which can speak authoritatively for all segments of that industry.

Some time we hope such a headquarters can be established—a headquarters which will bear to the packaging industry, if you will, the same relationship that the Society of Automotive Engineers bears to the automotive industry.

Pending that time, it is my hope that the enormous amount of research development that went into the preparation of the JAN specifications will help to keep protective functional packaging among the important engineering factors in industry.

QUESTION: Where can copies of JAN Specs. be obtained?

COMMANDER LEWIS (from the audience): Write to the U. S. Navy Bureau of Supply and Accounts, Washington, D. C. Code, RSX.

MR. HOLBROOK: For the Army, address your request to the Specifications Branch of whatever service you are dealing with. For example, if you have ordnance contracts, address them to the Specifications Branch, Office of Chief of Ordnance, Washington. That will work equally well with Quartermaster or any other services.

QUESTION: Has any provision been made for the periodic revision of JAN specifications?

MR. HOLBROOK: The answer to that is: Definitely yes, it certainly will be continued through working committees composed of representatives from the armed services, from the Army Air Forces and the Bureau of the Navy, and they will continue to work to keep these specifications up to date, and attempt to use the facilities of the laboratories, the Naval Research Laboratory and other contributing laboratories. And they will also probably continue to ask members of industry to come down and sit in with them on the revision of the specifications.

QUESTION: Where should greaseproof, waterproof and other barrier materials now be sent for qualification?

MR. HOLBROOK: The Forest Products Laboratory is still the official testing agency for the Ordnance Department on all greaseproof, waterproof, moisture-vaporproof and similar materials. They will continue to prepare lists of materials found to qualify with requirements and specifications. The Aberdeen Proving Ground will continue to test protective stripping compounds of the cellulose type and Rock Island Arsenal will continue to test corrosion preventive materials.

QUESTION: Do you think with the cessation of hostilities that the rigors of shipments will ease and that a relaxation in specifications can be expected?

MR. HOLBROOK: So far as industry is concerned, on material being prepared for long-time storage, I think exactly the same requirements are going to apply. On that material which will be quickly disposed of through the disposal agencies, I think there will be a very drastic reduction in requirements.

QUESTION: Do you think the military services may go back to their old practice of taking packages "acceptable to common carriers"?

MR. HOLBROOK: Not if Commander Lewis or I have anything to do with it. My answer to the question would be that I think I am correct in saying an emphatic no.

QUESTION: To what extent are the Army Air Forces using JAN specifications?

MR. HOLBROOK: Well, now that the war is over, I am glad to report that they are very shortly going to be using them about 100%. They swung over rapidly in the last month or so, and right now a meeting is being planned to iron out the differences of opinion on the three or four remaining specifications. After that has been taken care of, I think we can look for that Utopian situation where all the services actually have agreed on specifications across the board.

QUESTION: Do the German and English exporters to South America use corrosion-preventive packing comparable to that achieved by following JAN specifications?

MR. HOLBROOK: Well, I do not know just what the British mind is concocting for the postwar world, but I do know this: that they have had delegation after delegation over here in this country to observe and study the methods of preservation that we now accept as a matter of course. And we have sent people over there to help them. Their own war packaging specifications are by and large a verbatim reproduction of our own, so they have learned an awful lot about the preserving, wrapping and packing.

QUESTION: Will a JAN specification be issued covering cushioning materials?

MR. HOLBROOK: Well, that is a tough one. We tried for three years to write a cushioning material specification but, frankly, we did not get to first base. There is just too darn much difference between characteristics and between the kinds of materials to do a satisfactory job. There will be a kind of general coverage for basic requirements for cushioning materials in the specifications I spoke of before. I understand that the Army intends now to prepare a specification on cushioning materials which will be a performance and not a materials specification.

(The Conference adjourned at 4:45 p. m.)

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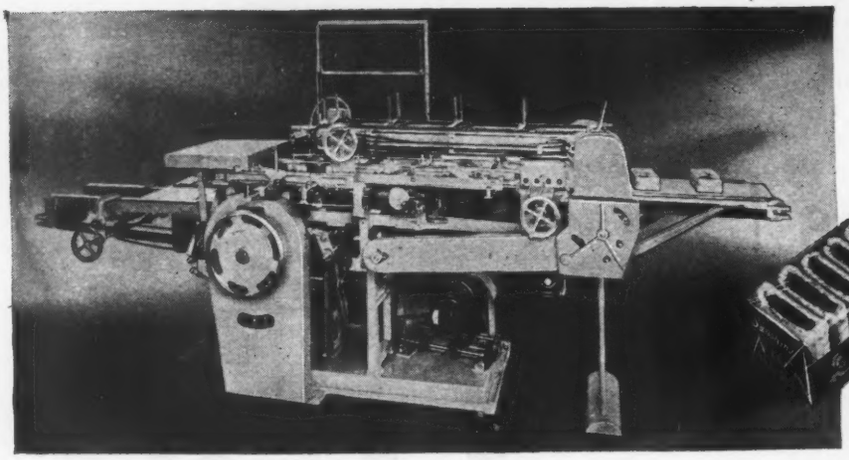

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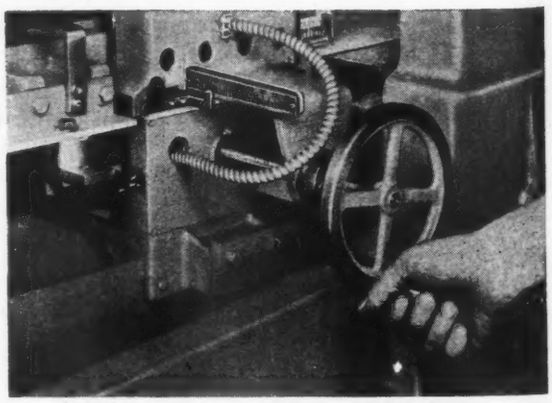

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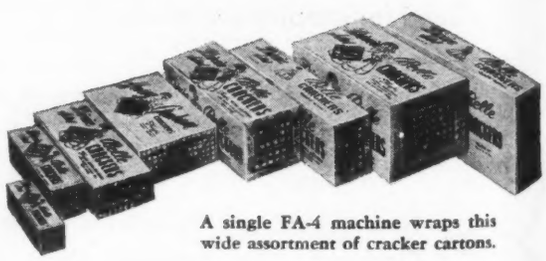

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Measuring permeability

. . . to carbon dioxide and water vapor

by Junius D. Edwards and D. B. Strohm†*

During the war, the requirements of the Army and Navy for packaging materials resistant to water-vapor penetration made the manufacturer increasingly conscious of the permeability problem. In the last four or five years, there has been a great deal of investigational work in this field and numerous contributions to the technical literature. The part that gases other than water vapor may play in the preservation of foodstuffs, for example, is also being recognized and in addition to vacuum packing, attention is being paid to the packing of materials in atmospheres of carbon dioxide or nitrogen.[1] Fewer data are available in regard to the permeability of materials to these gases than is the case with water vapor, and the methods employed for their measurement are in some cases different from those used for the measurement of water-vapor transmission.

The most commonly employed method for the measurement of the water-vapor transmission of packaging materials is that of weighing the amount of moisture absorbed by a desiccant in a small cup or container closed and sealed at the top with a sheet or film of the material under test. When the test cup is exposed in an atmosphere of controlled temperature and humidity for a measured period, moisture vapor passes through the material and is absorbed by the desiccant, after which the container is re-weighed. When experimental conditions are properly controlled, such a method permits obtaining reproducible results and reliable comparisons between materials. The present article will show how substantially the same equipment can be employed to measure the rate of penetration of carbon dioxide as well as water vapor. The data obtained in a series of experiments show how the moisture absorbed by the several test materials affects their permeability to carbon dioxide.

The method employed was developed in the Packaging Laboratory of the Aluminum Co. of America at Edgewater, N. J. It is essentially that used for measuring moisture-vapor transmission except that an absorbent for carbon dioxide, such as soda-lime or Ascarite, is employed in the test cup and the cup is then stored for the test period in an atmosphere containing a controlled concentration of carbon dioxide. In the present tests, this atmosphere was substantially one of pure carbon dioxide, or of carbon dioxide saturated with water vapor. Soda-lime and Ascarite also efficiently absorb any water vapor penetrating the test specimen.

The experimental setup is shown in Fig. 1. The test cups, sealed with a film or sheet of the material under test, are stored on a rack in a desiccator. The desiccator should be placed in a constant temperature cabinet (not shown) to permit close control of the temperature of the test cup and specimen. The atmosphere in the desiccator is controlled by passing through a stream of dry or wet carbon dioxide at the rate of about 1500 cc. per minute. At the start of a test, it is desirable to flush the air out of the desiccator by a very rapid stream of carbon dioxide. The gas flow is measured by a flow meter. The gas is obtained from a cylinder of liquid carbon dioxide and as it issues from the cylinder is, of course, quite free from moisture. Where the combined effect of moisture and carbon dioxide is desired, the stream of carbon dioxide is passed through a wash bottle to saturate the gas with moisture and water is placed in the bottom of the desiccator. It is desired that the gas pressure in the desiccator be non-fluctuating and equal to that of the atmosphere at all times. The test cup is weighed at the beginning of the test and removed from the test chamber after 24 hours, or a shorter period if the test material is of high permeability. It is placed in a desiccator over anhydrous calcium chloride for 4 hours and then re-weighed.

For comparison, the permeability to water vapor may be

A method is described for measuring the permeability of materials to carbon dioxide. It is an adaptation of a procedure widely used for measuring the permeability to moisture vapor and uses some of the same equipment. This method permits the measurement of thin films and sheets under a variety of test conditions and permits some interesting comparisons, particularly as to the effect of the moisture content of plastic films on their permeability to carbon dioxide. With some materials this effect is small, but with others it is very substantial.

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† Supervising Chemist, Packaging Laboratory, Aluminum Co. of America, Edgewater, N. J.

[1] See "Gas Packing of Dehydrated Fruits and Vegetables," by W. K. Newman, Modern Packaging, Sept. 1945, pp. 142–144.

determined in a similar manner in another desiccator by using an atmosphere of air with controlled humidity and using a moisture absorbent in the test cup.

Apparatus

The details of the test cup and the method of attaching the test specimen to the cup will be of interest. The method is substantially that employed by one of the authors about 1920 in measuring the permeability of rubber films to moisture (1)[2] and later in measuring the permeability of paint films (2, 3). A glass cyrstallizing dish (petrie dish) about $3\frac{1}{2}$ in. in diameter (area—9.62 sq. in.) and $\frac{5}{8}$ in. deep is employed as the container. The test specimen is sealed to the upper rim of the dish by means of wax. A mixture of 60% amorphous wax and 40% paraffin of the grade used for sealing preserves has been found quite satisfactory for this application. The sealing compound is melted in a porcelain dish and the rim of the inverted test cup is dipped into molten wax so as to coat the rim uniformly to a depth of about $\frac{1}{16}$ in. The dish is then filled with the absorbent, preferably Activated Alumina or calcium chloride of about 8-mesh size for moisture, or soda-lime for carbon dioxide. The test specimen, cut to a square somewhat larger in size than the diameter of the dish, is then placed on the rim of the container. Over the specimen is placed a flat, circular piece of aluminum (6 in. in diameter and about $\frac{1}{32}$ in. thick) to be used as a pressing plate. This plate holds the specimen to be tested firmly in place over the test cup, offsetting curling or creeping and keeps the specimen in firm contact with the sealing wax on the edge of the cup during the sealing operation. The next step is to place a warm iron maintained at a temperature of about 150 deg. F., on the aluminum plate, for 1 to 2 minutes. The heat transferred through the aluminum pressing-plate melts the wax around the edge of the dish and seals the specimen firmly in place. After this has been accomplished the plate is removed and the wax allowed to solidify. The warm aluminum pressing-plate makes good thermal contact only where the film is held between the plate and the rim of the glass dish. Tests showed that its use did not affect the permeability of plastic films which might be changed by heating.

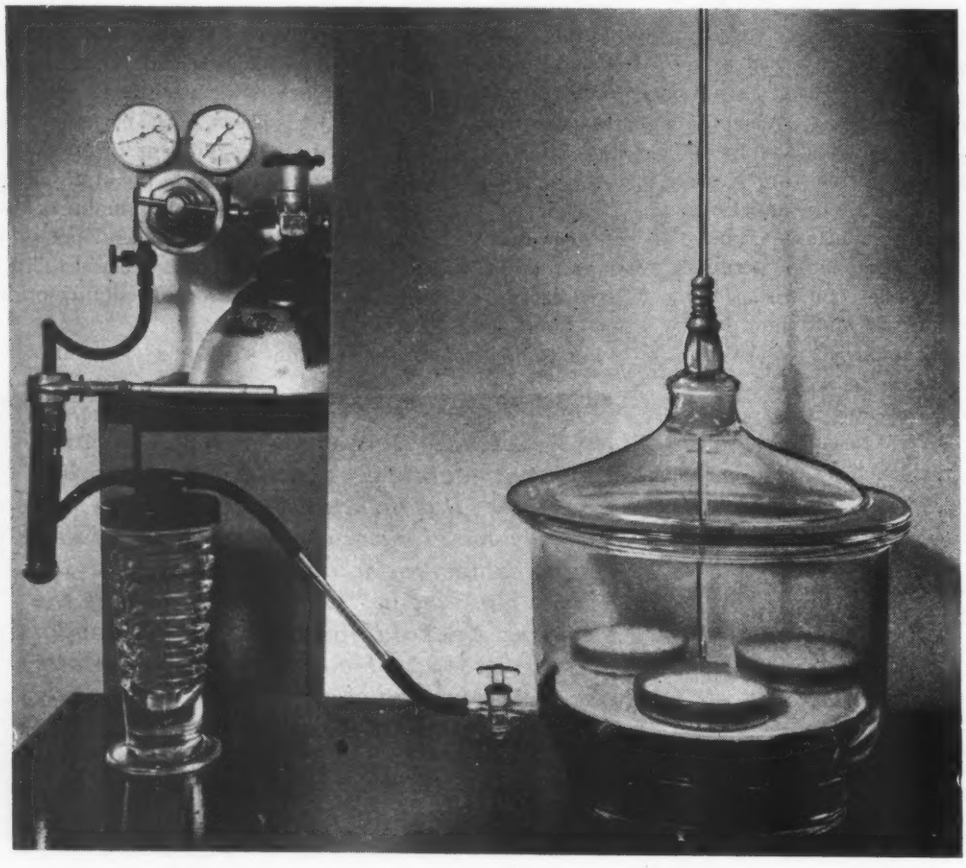
The test specimen is then trimmed to the shape of the cup so that approximately $\frac{1}{16}$ in. of the specimen projects beyond the edge. Then, with a camel's-hair brush, molten sealing compound is applied to the edge, fortifying the bond between the specimen and the dish and sealing the cut edge of the specimen. The sealing compound applied in this way should extend slightly over the edge of the specimen to form a bond, but should not extend beyond the rim of the cup, which might result in a reduction of the test area. Where the test is being carried out frequently, it is helpful to have a rotating stand on which to mount the cup during the final application of the wax to seal the edge of the specimen.

The method permits the use of a relatively large test area without necessitating the use of a heavy and bulky test container. The precision of results is also increased thereby.

The test cup should be filled with the absorbent so that virtually no free air space is left between the test specimen and the absorbent. Moisture or carbon dioxide passing through the film must diffuse through any air space to reach the absorbent and this, in effect, introduces a resistance to gas penetration because it increases, to some degree, the vapor pressure of the moisture or carbon dioxide on the under side of the film. In some methods the test cup is inverted during the test so that the absorbent is in contact with the film. There are objections to this procedure, particularly when the absorbent adheres to the surface of the specimen. The authors prefer the method just recommended, particularly where the test specimen is of low permeability.

It will be noted that under the experimental conditions

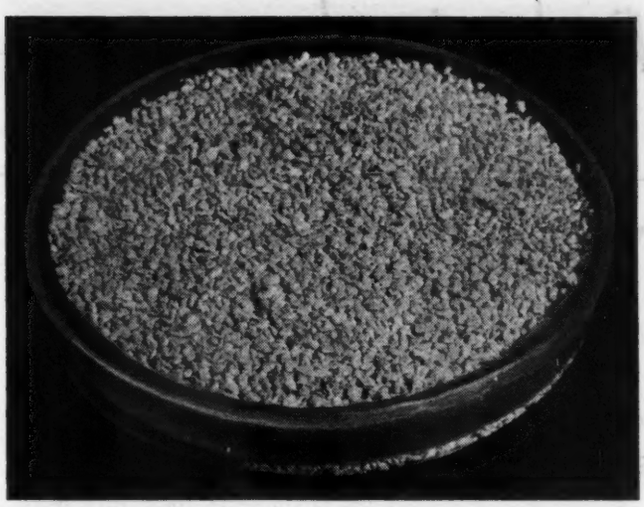
[2] Numbers in parentheses refer to "References" appended.



1—Apparatus for measuring permeability of films to carbon dioxide. The wash bottle is omitted when dry carbon dioxide is employed. Desiccator should be installed in constant temperature cabinet for close temperature control. By use of racks in desiccator, additional test cups can be accommodated.

selected, the partial pressure of either carbon dioxide or moisture on the inside of the test cup should be substantially zero. This condition can be changed in several ways, however, by changing the absorbent. For example, the absorption of carbon dioxide could be made complete and rapid by using a solution of sodium hydroxide in the cup. It has not been found very practical to place a liquid directly in the cup, since there is a strong tendency for the liquid to creep up the sides of the cup, even though waxed, and contaminate the test specimen. This difficulty can be overcome by filling the test cup with some medium such as absorbent cotton which has been saturated with the sodium hydroxide solution. In this case the partial pressure of water vapor inside the test cup would correspond to that of the sodium hydroxide solution selected. A 5% solution of sodium hydroxide has a water-vapor pressure of 16.9 mm. at 20 deg. C., which is only slightly lower than that of water at the same temperature, 17.5 mm. The permeability to carbon dioxide could thus be measured with a partial pressure difference of 743 mm. of carbon dioxide, but with no appreciable difference in the water-vapor concentration on the two sides of the test specimen. Using an absorbent medium of this nature, care would have to be taken, particularly with permeable materials, to avoid exhausting the absorbent capacity of the absorbent during the test period.

The procedure outlined may lead to certain difficulties where the test specimen is porous; that is, contains pinholes or fissures through which gas can flow under a positive pressure. When the test is started, the test cup contains an atmosphere of air between the test specimen and the absorbent. During the test period, carbon dioxide will diffuse into the test cup through pinholes; simultaneously, air diffuses outward and is swept away by the current of carbon dioxide passing through the chamber in which the test cup is placed. Carbon dioxide, reaching the inside of the test cup, is absorbed as fast as it reaches the absorbent. The air diffusing out is never replaced, however, and as a consequence the pressure inside the test cup is gradually lowered. The result is that the carbon dioxide proceeds to flow or effuse into the test cup because of the positive pressure difference, and the rate increases as the air diffuses outward. This is a set of conditions seldom, if ever, met with in packaging. In a specific test of a film with pinholes, the rate of passage of carbon dioxide (partial pressure of 760 mm.) was about 1,000 times that of water vapor in saturated air (pressure 25 mm.). With the same total gas pressure on both sides of the film, the ratio of carbon dioxide transfer to that of water vapor should have been much nearer the ratio of the partial pressures, namely, 30 to 1. If, instead of employing an atmosphere of pure carbon dioxide, an atmosphere of air with a low partial pressure of carbon dioxide is employed, this effect would, of course, be minimized. In the experiments with non-porous plastic films and carbon dioxide reported in Table I, all of the test specimens except the moisture-proofed cellophane and vinylidene chloride presented a concave surface after the test exposure, indicating reduced pressure inside the test cup caused by an appreciable permeability of the film to oxygen or nitrogen or both.



2—Glass test dish filled with carbon dioxide and moisture absorbent; transparent film is sealed to rim with wax.

Experimental results

Measurements of the permeabilities of several representative packaging materials are presented in Table I. Some, at least, of these plastic materials are combined with plasticizers and their permeability, as well as other physical properties, modified thereby. Since the objective of these tests was to demonstrate the method, only one lot of each material was tested and the values are not necessarily representative of the commercial products which are usually obtainable in a variety of grades. In the columns marked 1, 2 and 3 are given the experimental observations on the permeabilities of the materials to carbon dioxide, carbon dioxide saturated with water vapor and to water vapor in (*Continued on page 190*)

TABLE I. PERMEABILITY OF VARIOUS MATERIALS TO CARBON DIOXIDE AND WATER VAPOR (TEMPERATURE 25–27° C.)

Material	*Thickness, inches*	*Permeability, grams per 100 sq. in. per 24 hrs.* (1) CO_2	(2) CO_2 *Plus* H_2O	(3) H_2O	(4) CO_2	(5) *Relative permeabilities,* H_2O/CO_2 *at 25 mm. partial pressure*
Cellophane, moisture-proofed	0.0009	0.000	0.201	0.129	0.072	..
Vinylidene chloride	0.002	0.038	0.022	0.010	0.012	8
Rubber hydrochloride	0.0012	0.204	0.533	0.312	0.221	46
Polyvinyl chloride	0.0025	1.78	4.18	2.72	1.46	46
Ethyl cellulose	0.003	8.78	26.1	22.2	3.9	77
Aluminum foil	0.001	0.000	....	0.000	...	..
Aluminum foil	0.00035	(6)	....	0.052	...	..

1. Permeability to carbon dioxide at 760 mm. pressure difference.
2. Permeability to carbon dioxide saturated with water vapor at 26°; partial pressure of carbon dioxide is 735 mm. (760 − 25).
3. Permeability to water vapor in saturated air; partial pressure of water vapor is 25 mm. at 26° C.
4. Permeability (hypothetical) of film to carbon dioxide (partial pressure 735 mm.) through film in equilibrium with gas saturated with moisture; column 2 minus column 3.
5. Column 3 divided by column 1 and multiplied by 760/25.
6. Method not applicable to film with pinholes—see text.

Polyvinyl alcohols and acetates for packaging

*by J. W. Criss**

Vinyl resin polymers provide valuable new raw materials for the packaging industry through the wide choice of desirable properties offered by the different types and grades in which they are available. Polyvinyl alcohols[1] and polyvinyl acetates[2] are of interest in this field. They are used in the form of films, coatings, laminations, binders and adhesives for a variety of packaging applications.

Polyvinyl alcohols

Polyvinyl alcohol resins are produced by the hydrolysis of polyvinyl acetates. Acetylene and acetic acid are first reacted to form vinyl acetate. Polymerized, this becomes polyvinyl acetate. Principally by varying the degrees of polymerization and hydrolysis it is possible to produce a number of grades of polyvinyl alcohol differing markedly in physical and chemical properties.

Variations in the degree of polymerization of the intermediate polyvinyl acetates directly affect the molecular weights and viscosities of the resulting resins. As the viscosity increases, the resins show higher tensile strength, greater flexibility, increased tear resistance and emulsifying power. However, low viscosity polyvinyl alcohol is preferred for some applications requiring solutions of maximum solids content to produce maximum resin deposit.

* E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

[1] and [2] Reference throughout this article is to Du Pont's "Elvanol" (polyvinyl alcohol) and "Elvacet" (polyvinyl acetate).

***1**—Demonstrating grease-resistance and unusually high tear-resistance of polyvinyl alcohol film. Bag made of 0.003 in. film contains about 4 lbs. of lubricating oil. It is supported on two 20-penny nails driven through two thicknesses of film and into the board in background.*

Differing grades of polyvinyl alcohol can be produced within each viscosity range simply by varying the extent of hydrolysis of the polyvinyl acetate. Those hydrolyzed approximately 99% are referred to as "completely hydrolyzed" grades while those in which hydroxyl radicals have replaced acetyl groups to a lesser extent are referred to as "partially hydrolyzed" grades. The degree to which the intermediate has been hydrolyzed is important as a determinant of tensile strength, flexibility, water-sensitivity, solvent resistance, plasticizer receptivity and emulsifying power. The completely hydrolyzed grades have maximum tensile strength, grease resistance and solvent resistance. In general, partially hydrolyzed grades show greater adhesive power, receptivity to plasticizers, emulsifying power and water-sensitivity.

Modifications—Water is the most satisfactory and usually the only practical single solvent for most grades of polyvinyl alcohol. When polyvinyl acetates are hydrolyzed less than 70%, the products are not usually completely soluble in either water or alcohol. They will, however, dissolve in a mixture of water and one of the lower monohydric alcohols. Not many organic compounds exert any appreciable solvent action on polyvinyl alcohol. A few polyhydroxyl compounds, polyamines and amides have some solvent action and are sufficiently compatible to serve as plasticizers. Currently, glycerin is the most widely used plasticizer. However, a number of others, including triethylene glycol and ethanol formamide, have been used.

Water solubility is one of the important characteristics of polyvinyl alcohol, since it makes possible the avoidance of flammable and toxic solvents. However, for some applications it is desirable to reduce the water sensitivity of the polyvinyl alcohol after being deposited from water solution, and there are several practical methods for accomplishing this. The methods vary from simple heat treatment to treatment with heat and dimethylolurea or chromium compounds such as sodium dichromate and chromic acetate.

Polyvinyl alcohol cannot be recommended where moisture-proofness or a high degree of water resistance is required, because even the treated films and coatings absorb moisture and, on prolonged exposure, soften and lose strength.

Although not compatible in all proportions, starch, dextrin, glue, casein and urea may be used as extenders for polyvinyl alcohols. For some uses such as paper adhesives and coatings, film clarity is unimportant and there is sufficient agitation during application to prevent separation of the solutions. The proportions which may be used to produce solutions which will not separate on standing vary both with the grade of the extender and grade of polyvinyl alcohol.

Packaging applications—Polyvinyl alcohol resins have found extensive use in the paper industry. Since they are unaffected by vegetable, mineral and animal oils, polyvinyl alcohol resins are of interest to the packaging industry for use in the manufacture of greaseproof paper, paperboard and paper containers. Their satisfactory use as a greaseproof coating requires that there be deposited on the paper a con-

tinuous film of polyvinyl alcohol. Economy necessitates a film obtained with a minimum consumption of polyvinyl alcohol. This is usually more easily accomplished by the application of two light coats than by a single heavy coat. If grease-resistance rather than absolute greaseproofness is satisfactory, a light coating or sizing will suffice.

Polyvinyl alcohol can be used as a softener and transparentizer in making glassine. Glassine prepared thus is characterized by excellent transparency, good dimensional stability, high gloss, high strength and superior greaseproofness.

Polyvinyl alcohol resins are also useful products for adhesive purposes because of their freedom from odor, color and taste; their stability, high tensile strength and flexibility and their ability to blend with other adhesive materials. They are finding use in many types of adhesives. Some grades can be used as adhesives of the re-moistenable type. They combine this feature with absence of sticking together at high humidities. Polyvinyl alcohol may also be used as a thickener for rubber latex and neoprene latex adhesives.

Polyvinyl alcohol film

Polyvinyl alcohol in the form of film is marketed[2] under the name of PV Film. The film resembles cellophane in appearance and has the properties characteristic of polyvinyl alcohol, including high tensile strength, good flexibility, high tear and puncture resistance, imperviousness to many gases, water solubility, oil and solvent resistance and light stability.

TABLE I—PROPERTIES OF POLYVINYL ALCOHOLS*

Form	Powder
Specific gravity (20 deg. C.)	1.21–1.31
Specific volume, cu. in./lb.	22.9–21.1
Color	White to cream
Refractive index, n_D, 25° C.	1.49–1.53
Elongation, %	
Unplasticized film	Less than 10
Plasticized film	Up to 600
Tensile strength, lbs./sq. in.	
Unplasticized moldings	Up to 18,000
Unplasticized films	Up to 22,000
Hardness, Shore Durometer	
Unplasticized	Over 100
Plasticized	10–100
Water absorption, 1 wk. at 25° C., % by wt.	
Unplasticized moldings	
99% hydrolyzed	100–200
40–50% hydrolyzed	More than 150 with severe deformation
75–95% hydrolyzed	Dissolves or disintegrates
Heat-sealing temperature, ° C.	
Dry, unplasticized	165–210
Compression molding temperature, ° C.	
Plasticized	120–150
Heat stability, ° C.	Darkens gradually above 100°; rapidly above 150°; decomposes above 200°
Thermal coeff. of linear expansion, 0–45° C.	$7–12 \times 10^{-5}$
Burning rate	Slow
Solvent resistance	Excellent
Effect of light	Unaffected
Effect of weak acids	Softens or dissolves
Effect of strong acids	Dissolves or decomposes
Effect of weak alkalies	Softens or dissolves
Effect of strong alkalies	Softens or dissolves

* Du Pont's Elvanol.
[2] By Du Pont Cellophane Division

2—Half a sheet of paper was coated with polyvinyl alcohol resin, other half was left untreated. Photo shows how grease from mass of cold cream permeated the uncoated paper (right) while coated portion remained unaffected.

This film is so impervious to air that containers made from it will support a vacuum. This is of interest particularly in bag molding and in the packaging of foods, where prevention of oxidation is essential to maintain flavor and color. In addition to these advantages, the film is still flexible after long use and draws a minimum of dust because of its low static properties.

Water solubility of the film can be utilized to advantage in the marketing of unit quantities of certain products. Preweighed packages of water-soluble materials such as bluing, soap flakes and bath salts can be dissolved in water, facilitating their handling and use and reducing losses and dusting problems.

Resistance to oils, fats and organic solvents suggests still another field of usefulness. Bags of polyvinyl film as containers for lubricating oil and grease, and as container linings for shipping oils, solvents and shortening materials, are among the possibilities.

Toughness and high resistance to tear and puncture indicate its suitability as a material for making garment bags and transparent coverings for clothing, where its ability to hold stitching is important. This film has proved to be particularly useful as a backing for protecting uncured rubber and in the manufacture of embroidery laces where it is used as a backing to replace silk.

A complete report on packaging applications of polyvinyl film will appear in a later issue of MODERN PACKAGING.

Polyvinyl acetates

Polyvinyl acetates are thermoplastic resins available in solid, solution and emulsion forms. They are colorless, odorless, tasteless and unusually (*Continued on page 182*)

Dehydrated foods *in non-metallic containers—II*

*by T. J. R. Macara**

The process described by Isherwood (3)† in Part I of this report was submitted to practical trial under commercial conditions, as part of a test of various methods of packing 2-oz. blocks of dehydrated meat. Nearly 2,000 unit blocks, and 200 multiples each of eight blocks, were treated. 98% of the packages, both unit blocks and multiples, when coated by the recommended method were found to be air-tight after a journey by rail from the factory to the laboratory.

Dehydrated meat prepared as described in other papers from this laboratory (1 and 2) is a comparatively difficult material to compress and wrap, but it was used as a subject for this trial because at the time it was essential to know with certainty whether the method described by Isherwood (3) in Part I of this work could, if the need arose, be recommended for use with dried meat produced overseas.

The difficulty in handling dried meat arises on two accounts: 1—the granules of dried meat are springy (4) and the wrapped block is therefore not as rigid as could be desired; 2—the dried meat contains a high proportion of fat and if the outside of the wrapping is contaminated with fat, this might interfere with the even coating of the wrapped block with gelatin.

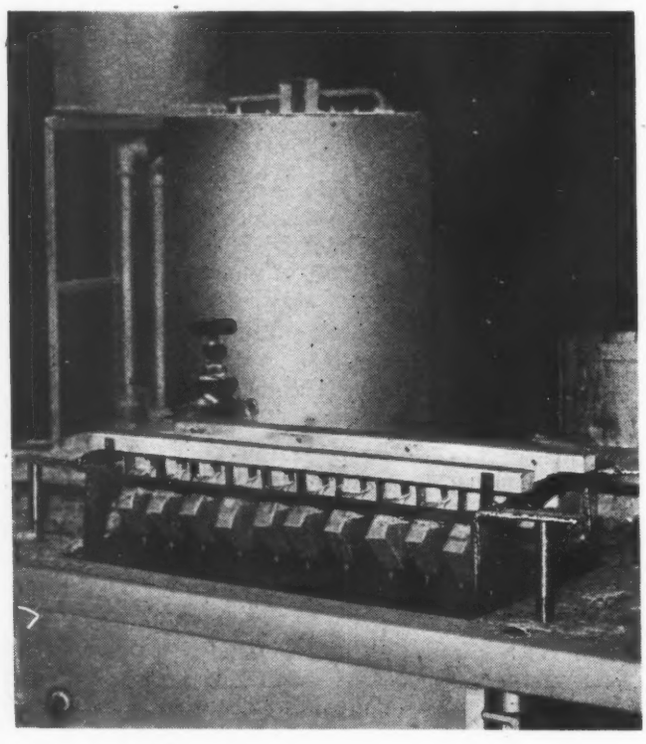
As a separate feature of this trial, the necessary conditions for the compression and wrapping of dehydrated meat employing the equipment available at the factory were determined by preparing some 10,000 2-oz. blocks. Briefly these conditions are that the dried meat of specified fat content (40% ± 3) should have a moisture content within the range of 5 to 7% and that it should be cooled below 15 deg. C. before compression.

The trial of the gelatin coating method was carried out on 1,950 individual 2-oz. blocks and 200 multiple 1-lb. packages each consisting of eight 2-oz. blocks.

* Low Temperature Station for Research in Biochemistry and Biophysics, Univ. of Cambridge & Dept. of Scientific and Industrial Research.

† Numbers in parentheses refer to "References" appended.

1—The bath containing the plasticized gelatin solution showing the battens and 2-oz. blocks in position. The blocks are just being drained after dipping. Note the level of the immersion which forms the first half-coat.



Gelatin coating of 2-oz. blocks

Earlier experiments in the laboratory had shown that it was likely that successful gelatin coating from the point of view of air-tightness would only be achieved by the use of the pretreated "banded" paper described by Isherwood. Since in the present trial, however, a cornerwise method of dipping[1] was adopted for the first time, it was decided to obtain comparative results again on both untreated and banded paper.

The paper used, one of the best available from the point of view of moisture-resistant properties, was a special plastic-waxed straw (thin, long-fibred) paper, of the following specification: straw paper D. C. weight 16/17 lbs. waxed to 21 lbs. and coated with a resinous hot melt to 46 lbs., supplied in coils $3^1/_2$ in. in width. The banding was carried out as described by Isherwood (3). The formula of the banding solution was gelatin 250 g., glycerol 100 ml., Turkey Red oil 14 ml. made up to one litre with hot water. The band was applied on the paraffin-waxed surface of the paper.

Groups of blocks were prepared for gelatin coating as follows:

Group A, 450 blocks wrapped in untreated paper Group B, 600 blocks wrapped in banded paper	Blocks rather weak and loosely wrapped
Group C, 500 blocks wrapped in untreated paper Group D, 400 blocks wrapped in banded paper	Blocks firm and tightly wrapped

The blocks were wrapped on hand-operated sleeving machines. Considerable difficulty was experienced in wrapping the blocks in banded paper. If the heating elements on the

[1] By use of this technique the half coats overlap over the *diagonals* of the block and consequently should give extra thickness at the corners. When a double coat is given, the overlap is arranged to cover the diagonal not covered during the first coating.

This is the second and concluding part of a British report on dehydrated foods in non-metallic containers. It covers the evaluation of a small-scale production test on the gelatin-dip method of eliminating oxygen. The results confirm the laboratory findings and recommendations. Cost estimates show that the process, for larger packs, compares favorably with the cost of packaging in metal cans.

TABLE I—RESULTS OF AIR-TIGHTNESS TESTS (2-OZ. BLOCKS)

	No. of blocks tested	*% leakers*	*Test*	*Location of leak by test (c)*	*No. of blocks tested*	*% leakers*	*Test*	*Location of leak by test (c) and comments*
	At Factory				*At Low Temperature Research Station*			
Group A Untreated paper double coat	100	7	(a)	Corner leaks	50	14	(a)	Corner leaks
					50	22	(b)	Sound packs contained <1% O_2 7 days after gas packing. Leakers showed more than 5% O_2 7 days after gas packing. All corner leakers
Group B Pretreated(striped) paper double coat	100	1	(a)	Corner leak	50	2	(a)	Corner leak
					50	2	(b)	Distinct corner leak
Group C Double coat	100	11	(a)	All corner leaks	50	16	(a)	Mainly corner leaks. A few blocks leaked where coat damaged
					50	11	(b)	.....
Group D Striped paper double coat	100	Nil	(a)	.....	50	2	(a)	Coat damaged owing to pressure of spring clip
					50	Nil	(b)	.....
Group C Double coat overwrapped in waxed cellophane					100	12	(a)	Corner leaks
						10	(b)	Eight serious leaks; more than 10% O_2 1 week after gas-packing. Two packs contained 3.8% and 5.2% O_2 respectively
Group D Double coat overwrapped in waxed cellophane					50	Nil	(a)	.....
						Nil	(b)	.....

wrapping machines became too hot the gelatin band was softened and as a result tended to adhere to the hot plates, causing very loose wrapping or even tearing of the wrap. If the temperature of the heating elements was lowered appreciably, the wax melted only very slowly and difficulty was experienced in heat-sealing the wrap. There is only a small difference in temperature between the melting point of the wax and the softening point of the gelatin band and for satisfactory wrapping the temperature of the hot plates must be very closely controlled. This can quite easily be done by using a thermostat, but in the present trial this was not available and the temperature of the hot plates could only be varied by the adjustment of lamp resistances in the circuit and this was not sufficiently accurate for satisfactory results. From 20 to 25% of the output of the wrapping machine had to be rejected before coating with gelatin on account of faults in the wrapping, as compared with less than 5% when plain paper was used. This difficulty is not insurmountable and provided the temperature of the hot plates is satisfactorily adjusted and controlled, there seems no reason why the banded paper cannot be used on a routine production line.

Dipping of the wrapped blocks was carried out by an automatic dipper. Battens were prepared carrying ten clips and the blocks were held cornerwise in these clips as illustrated in Fig. 1. Two battens at a time were fixed on a cradle over the bath of gelatin and the cradle was lowered by cam action so that the blocks were immersed for five seconds to the extent of approximately two-thirds of their surface. After five seconds for draining, the battens were quickly inverted and placed in a drying oven for twenty minutes. The first half coat was then dry enough for the blocks to be reversed in their clips and the second dipping carried out to make one complete coat. The second coat was applied on the opposite diagonal so that each corner of the block had three coats apart from that provided by the strips, when present.

Dipping presented no difficulty provided the operator occasionally skimmed the surface of the bath solution to remove any air bubbles caused by drainage from the dipped blocks. If the stirrer was stopped for some time a skin formed on the surface and this also was skimmed off.

The precise moment at which to turn over the batten after draining called for some judgment on the part of the operator.[2] If the batten was turned over too early, excess gelatin flowed back and formed beads on the edges of the block and if left too late the last drops of solution set while hanging from the corner of the block. The removal of the coated blocks from the clips after drying required care and the blocks needed to be allowed to cool down to room temperature before attempting this operation. The clips often left a mark on the surface of the coated block but this did not appear to affect the air-tightness.

Gelatin coating of 1-lb. packs

The 1-lb. unit, consisting of eight 2-oz. wrapped blocks in a waxed-paper outer wrap, was hand-wrapped and heat-sealed as shown in Fig. 2.

Two groups were prepared:

Group X—100 1-lb. packages with a plain waxed-paper outer wrap.

[2] The temperature of the gelatin bath and the viscosity of the solution need to be carefully controlled. In the present instance, the former was maintained at 45 to 47 deg. C. The viscosity was checked by means of a pipette previously calibrated to deliver a fixed quantity of glycerol in 3 to 4 seconds at 45 deg. C. The same volume of gelatin solution was delivered in 15 to 20 seconds at the same temperature. It may, however, be found in practice that the conditions must be adjusted to the particular properties of the gelatin employed and this can only be ascertained by performance tests.

Group Y—100 1-lb. packages with a pre-treated ("banded") waxed-paper outer wrap.

The paper used was straw paper coated with a resin wax-type hot melt as used for the 2-oz. blocks, supplied in coils 7 in. in width.

For Group X, the paper was cut into pieces 13 in. long. For Group Y the paper was "banded" as before, but the bands were applied with their centers 4 in. apart and $^3/_4$ in. in width. The banded paper also was cut into pieces 13 in. long.

With Group X, special care was taken with the heat-sealing operation to insure that the flaps and corners of the wrap were sealed down effectively, but Group Y received no special attention; the packages were then dipped by hand in the gelatin bath, each package being dipped cornerwise and given a double coat of gelatin. Owing to the fact that there were no suitable drying racks available, the packages could not be dried in the oven and the coats were allowed to dry out on improvised stands at room temperature. Drying overnight was found to be satisfactory.

Testing of coated blocks and packages for air-tightness

The gelatin-coated packages were tested for air-tightness by three methods:

1—By partial vacuum test indicating leakage of air into the package.

2—By analysis of the head-space gas, 7–10 days after gas-packing with nitrogen.

3—By inflation and immersion in an acetone bath to determine situation of the leak when it was found to be present.

Samples from Groups A to D were tested by methods 1 and 3 at the factory during the course of the trial. All the remaining packages were dispatched to Cambridge and tested by the three methods.

A certain specified number of the blocks in Groups C and D and all the packages in Groups X and Y were over-wrapped in cellophane coated with a resin wax-type hot melt before packing in cases holding 50 lbs. net for dispatch to the laboratory.

The results of air-tightness tests are recorded in Tables I and II.

TABLE II—RESULTS OF AIR-TIGHTNESS TEST (1-LB. PACKS)

	No. of blocks tested	*% leakers*	*Test*	*Comments*
Group X	50	40	(b)	Packs contained more than 5% O_2 7 days after gas pack. Sound packs showed <1% O_2 with the exception of 4 packages which may not have been effectively gas packed. Mainly corner leaks; <in two packs small leaks occurred at the end fold
Group Y	50	2	(b)	Pack contained 5% O_2 7 days after gas pack. Sound packs showed 1% O_2. Inflation test showed that the leak was situated at the corner of the pack

Discussion of results

The results clearly indicate that satisfactory air-tightness can be achieved by carrying out the process of coating with plasticized gelatin solution as specified by Isherwood. Any attempt at simplification of the procedure, for instance by omission of the gelatin band from the paper in which the block or package is wrapped, leads to a serious incidence of non-air-tight packages. Properly coated packages, moreover, survive transport without appreciable increase in the number of leaks. The present trial, therefore, confirms in every way the laboratory experiments and results.

The question arises as to the commercial practicability of the method, for example as regards cost in material and labor. Careful records were kept throughout the trial of these items but it is necessary here only to quote the over-all average figures. For the 2-oz. blocks (*Continued on page 192*)

2—Eight of the 2-oz. blocks are being wrapped to form the 1-lb. multiple package.

here's a war baby that's going to keep on growing

...thanks to the QMC

Developed to meet a special wartime need, Dewalco Waterproof Cements turned in an outstanding job for the Army. Besides true waterproofness, their application characteristics made possible high production schedules with a minimum of floor space. Thanks to the QMC, who needed waterproof case cements for overseas shipments, here now is a group of tested products in which packers are already finding wide peacetime possibilities. New formulations, now that restrictions on critical materials are rapidly lifting, suggest still wider uses for this war baby . . . and at attractive prices. Where a fast-acting, flexible, waterproof bond on hard-to-seal boards and papers is a necessity, Dewalco Waterproof Cements will help solve many packaging problems. We believe it will pay you to investigate them. We'll be glad to swap our time with yours—to our mutual benefit, we hope. Please give us as many details as possible, when you write.

packaging division

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This consultation service on packaging subjects is at your command. Simply address your questions to Technical Editor, Modern Packaging, 122 East 42nd St., New York 17, N. Y. Your name or other identification will not appear with any published answer.

Wet strength of cellulose acetate

In the July issue appeared a question and answer concerning the water-vapor transmission of cellophane and cellulose acetate as it applied to packaging of fresh fruits and vegetables. As a result of this, one of the producers of cellulose acetate has called to our attention an omission of one of the important properties of acetate. This letter in part says: "...a very honest answer to a comparison between cellulose acetate and regenerated cellophane for the packaging of fresh fruit and vegetables. In all fairness to the inquirer do you not agree that you should point out that cellulose acetate is not softened by water or vegetable juices?"

It is a fact that cellulose acetate, since it does not absorb water, will maintain its strength and durability under moist conditions which would cause cellophane to soften and lose some of its strength properties. We regret that this important characteristic was not included in our original answer.

QUESTION: We propose to open a foreign market for certain of our products, which will involve export shipping. It would be appreciated if you could give us some suggestions in the packaging of this material for export shipments. These commodities are to be packed in both glass and metal containers.

Our domestic shipments of these products have been shipped commercially in the conventional corrugated cartons with half slotted dividers and we have entertained the thought of shipping two or more of our regular domestic shipping containers in a wooden box, but hesitate due to lack of experience.

ANSWER: The best way for you to determine proper export packing for your products is to first contact and discuss your problems with your current supplier of packing materials, as well as wood box and wire-bound box manufacturers and others. You should also go over various government specifications as they apply to export packaging to give you some idea of the type of containers and weight requirements, etc. You can obtain a great deal of useful information by contacting such government agencies as the Forest Products Laboratory at Madison, Wisconsin.

After you have decided upon several different types and kinds of containers, you should then arrange to have samples packed for testing in a laboratory. This testing will give you comparative data on the carrying qualities of your export pack versus your domestic pack, as well as the durability of the various kinds of export containers which you think look promising.

If the test results and recommendations of the laboratory show that none of these containers are satisfactory, you can go through the same program again and have a new set of samples prepared for you of different construction and type. A program of this kind will eliminate much of the guesswork which occurs if you start export shipping in containers which are bought on price or opinion.

Greasproofing for butter cartons

QUESTION: Our company has recently been working on redesigns for butter and lard cartons. We find that it is very difficult to get inks which are not affected by grease. We have found for some time that the average butter carton and liner is not sufficiently greaseproof. We know that greaseproof materials can be made but usually such coatings make the packaging materials too expensive for our purposes. Do you know of any cartons treated with really greaseproof coatings?

ANSWER: Your question must be discussed in two parts:

(1) A carton material which is resistant to the penetration of butter and lard, and,
(2) The problem of obtaining inks which are not softened and smeared by contacts with butter and lard.

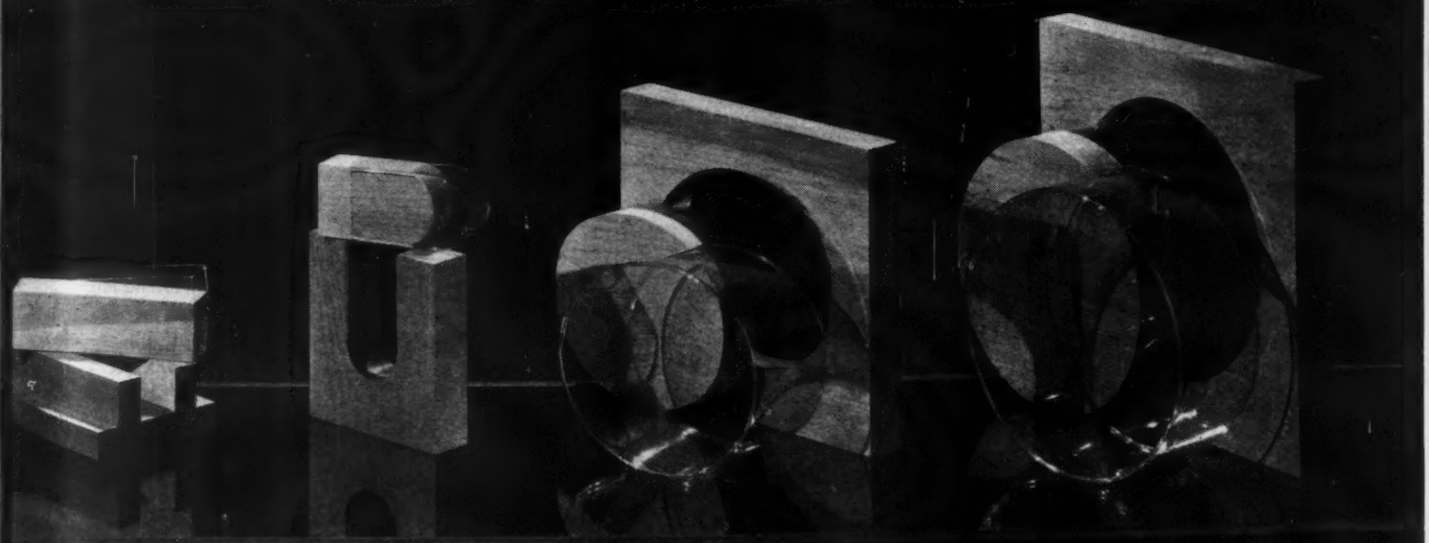
There are carton materials which are completely resistant to the penetration of lard or butter when tested in the laboratory as flat samples. Some of these materials have been found to be capable of a considerable amount of scoring and forming without appreciable reduction of their grease resistance. These materials in general consist of laminated structures of board combined to such greaseproof materials as cellophane, parchment, glassine, etc., or coated with heavy layers of materials such as protein, polyvinyl alcohol, certain vinyls, etc.

By the proper choice of film or coating composition, very durable, highly grease-proof structures are possible. They are, however, as you point out, quite expensive as compared to board which have been given sizings or light surface treatments to render them grease repellent.

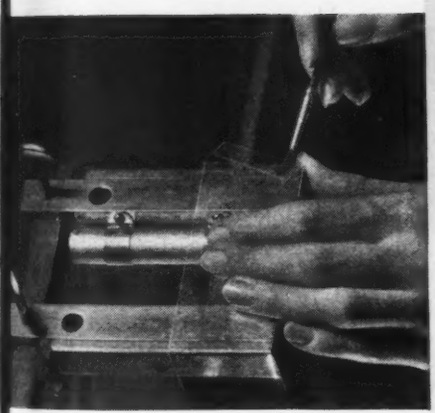
In the particular case of lard or butter cartons, such greaseproof boards would not be used to their maximum effectiveness because there is no attempt in the construction of a lard or butter carton to prevent the product from coming in contact with the cut edges of the board or by so forming the package that, if liquefied, the fats could not escape from the ends or closures.

Because of the construction used, it is possible for the fatty materials to be smeared on the surface of the carton and this requires that the surface of the board shall not stain badly or the inks soften and smear or (*Continued on page 194*)

SEE WHAT'S COMING YOUR WAY



Wooden forms—like the "block" your hatmaker uses—make possible a variety of shapes and sizes.



Adjustable heated bars support the box as the edges are joined by quick-setting transparent adhesive.

Flat sheets become cemented cylinders. A heated mandrel—shown in use—is one of the final steps.

Eastman Acetate Sheet now available —plan "individual showcases" for your goods with the help of the Kodak Packaging Laboratory

At this Kodak "pilot operation," you and your staff are offered every opportunity to "get in on the ground floor" . . . to learn the fabrication possibilities for the package of tomorrow.

All methods of fabricating Eastman Acetate Sheet—drawing, creasing, beading, embossing—are available for study and practice. This laboratory's equipment demonstrates the fundamental principles employed in making transparent plastic containers. Kodak's technicians are right there, too —to guide and assist. Write for an appointment.

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WASHINGTON REVIEW

R. L. Van Boskirk, Washington Editor

● **WPB To Become Ghost Town**—Come November 3rd, the organization formed of industry men loaned to the Government to speed war production will pass out of existence by presidential order. J. A. Krug will retire as chairman and the small army of 400 or more people drawn from industry will return to former or similar posts. Edward J. Detgen, Director of the Container Division will assume a post with Owens-Corning Fibrglas Co. at Toledo. A new agency—much smaller, of course—will take over the WPB tasks of equitable allocations, production expansion and inventory control. This agency will be known as the Civilian Production Administration under J. B. Small, recently Mr. Krug's chief of staff.

● **Paper Still Short**—Even though the wartime restrictions on production and use of nearly all types of paper other than newsprint have been lifted, there is a definite feeling among officials in the Capital, in a position to view the broad picture of the paper industry objectively, that demand will continue to exceed supply probably until the end of the year, if not beyond.

In order to assure a maximum production of paper and paperboard to meet reconversion demands, WPB has removed the restrictions on the use of idle paper machines through an amendment to M-241. In making this amendment, however, WPB was careful to point out that it was not a revocation and that, although the war is over, the Army, Navy and certain other federal agencies still require large quantities of several types of paper.

Mills producing paper and paperboard (other than rag content fine papers) must reserve 20% of their monthly production for Government demands. This figure replaces the figure of 35% formerly applicable.

However, WPB asserted, "expanding civilian needs, due to demands for packaging reconversion products and certain wartime-restricted commodities, will not be handicapped by lack of paperboard containers."

Commenting on the performance of the paperboard industry during the war, WPB said that "despite shortages of manpower and materials, the paperboard industry met all military demands and also produced a supply adequate for civilian needs."

Folding boxboard, used in producing millions of service ration cartons, was controlled through Conservation Order M-378, now revoked. Out of total requirements approximating 625,000 tons per quarter, 285,000 tons were for packaging foods and over 50,000 tons for military purposes. Miscellaneous board, used in manufacturing shell containers, bomb bands and other military items, required more than 175,000 tons a quarter.

Even during the war years, WPB said, about 75% of total permissible set-up boxboard production was used to meet civilian requirements, including boxes for laundry, wearing apparel, tobacco, candy, food, toys, games, sporting goods and gift packages. Limitation Order L-239 which controlled this type of board has now been revoked, and even dummies for display uses or empty boxes for resale are now being made.

● **Tin Situation**—While tin still remains one of the chief bottlenecks to reconversion, there are becoming apparent some tints of rose in what has heretofore been a dark and gloomy picture.

In the first place, this country has been assurred of most of Bolivia's production for another year through a new agreement between our Government and that of Bolivia. Under the agreement, the United States will get about the same amount of tin as under the previous arrangement—all of Bolivian production except some high-grade concentrates, of which we will get about half and the British the rest.

At the same time, it has been learned that at least two big tin smelters in British Malaya—the world's most important producing area—are still in operation. Also, the Dutch are making ready to move into tin production as soon as they reestablish themselves in the Netherlands East Indies, which should be soon. They have been granted top priority by this Government for necessary mining and dredging equipment.

This Government has special missions of American experts investigating the status of the tin situation in Malaya and the Dutch East Indies and more information may be forthcoming soon.

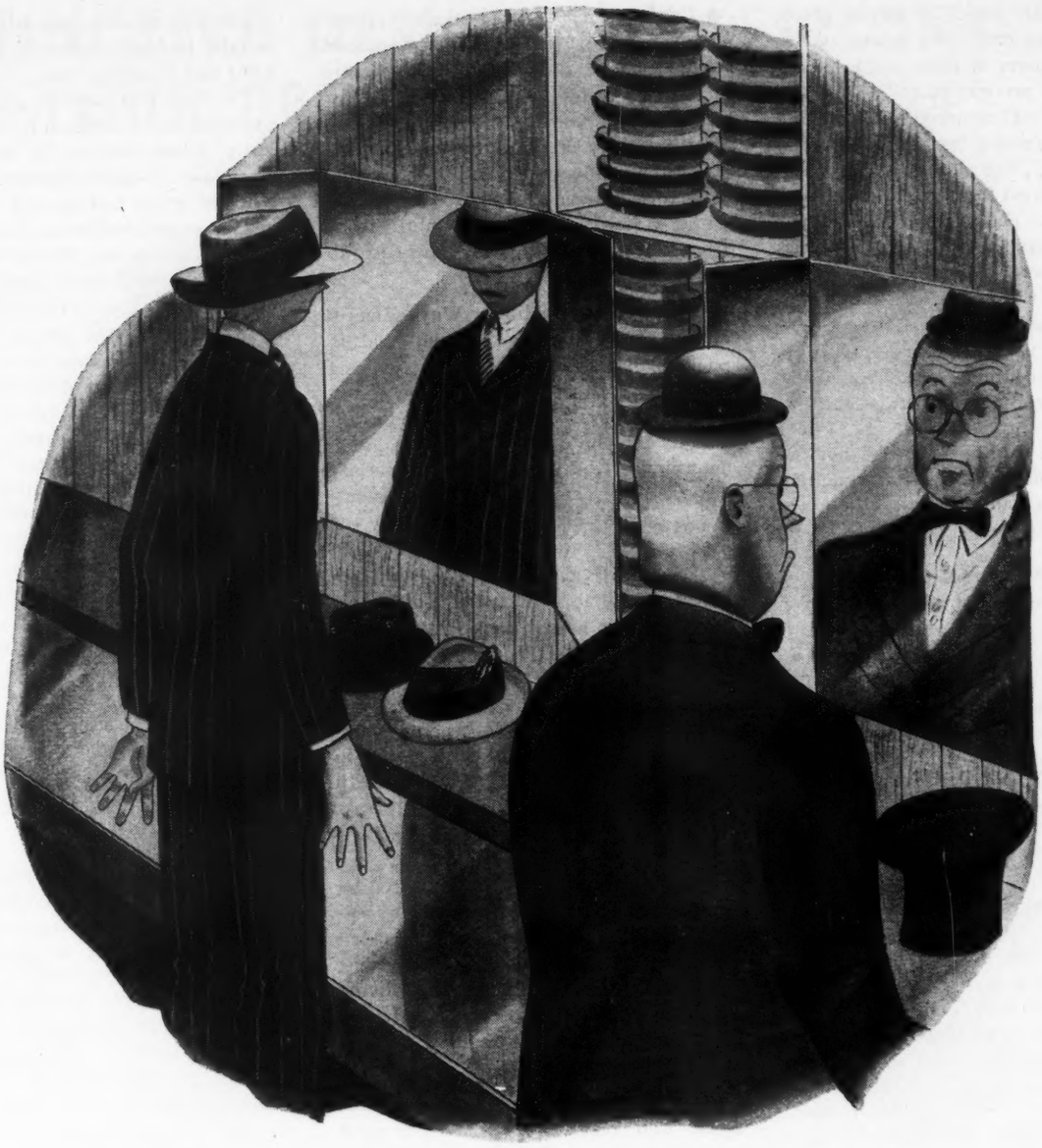
There will be no lifting of Government controls on tin in this country until shipments from these areas are restored, of course. According to WPB, tin mill product requirements, principally tin plate, in the current quarter will be approximately 840,000 tons minimum, compared with 933,000 tons in the third quarter. The fourth quarter figure includes 575,000 tons for food containers; 20,000 tons for bottle caps; 25,000 tons for other types of closures; 6,500 tons for home canning; 40,000 tons for Canada; 95,000 tons for lend-lease and about 70,000 tons for all other uses.

Although WPB has lifted quota restrictions on use of glass containers, tinplate closures will still remain under control for an "indefinite period."

● **Lead Still Scarce**—Many pre-war users of lead will not be able to obtain sufficient supply for several months, despite the war's end, WPB has warned. Order M-38, which restricts delivery and controls the use of lead, whether primary, secondary or scrap, has been amended to limit the antimonial lead that may be used for storage batteries (except for military users), but this will mean little to users of the mineral in other forms so long as it remains in scarce supply.

● **Steel Aplenty**—In contrast to the situation of last July, when WPB had to issue a direction sharply restricting delivery of certain types of sheet and strip steel, there now seems to be plenty of nearly all types of sheet, productive capacity for producing it and even some already fabricated containers made from it, as the result of huge military cutbacks and the release of surpluses. The restriction on deliveries, has, of course, been lifted. Immediately after the Japanese surrender, the Quartermaster Corps terminated contracts for about 2,835,000 16-gage, 55-gallon drums, about a million 5-gallon "blitz" cans and a substantial quantity of flat sheet which the Army had been sending overseas for fabrication into drums in widely scattered drum plants in theaters of operation. These overseas drum plants have been closed down and at the same time the Army is releasing drums held in this country. Coincident with these cancellations and releases, OPA issued new ceiling prices for all sales of unused steel drums, pails and containers, many of which had had been damaged or had deteriorated in storage.

● **Textiles Reconverting**—With the military virtually out of the textile market (at least by comparison with the huge takings



"Do *you have lid trouble?*"

OF all people, it shouldn't happen to canners. That's why we take such pains to see that every item in the manufacture of Crown cans is just right for your most efficient operation.

When you use Crown cans, you are sure of getting the correct type of plate . . . the proper coating for your particular job. You likewise know that the end seams have been given a liberal flow of compound . . . that there are neither cracks nor perforations in the ends. And since proper sealing of the ends calls for precisely functioning closing machines, we assure you Crown's equipment for this purpose is the finest made.

CROWN CAN

INDEPENDENT AND HELPFUL

CROWN CAN COMPANY • NEW YORK • PHILADELPHIA • Division of Crown Cork and Seal Company, Baltimore, Maryland

of the past year) and WPB having placed most heretofore controlled fabrics on the free market, users of most textile fabrics are nearing a pre-war status. However, a set-aside is still required of the manufacturer of osnaburg (needed for agricultural products), and class A and B sheetings, likewise used for bags. At the same time, WPB has placed osnaburg and cotton victory bagging on the list of fabrics for which priority assistance is available.

Because of the continued shortage of burlap bags, the provision against converting of new or used bags for any purpose other than for container usage remains in effect and the end use restrictions and size standards for textile bags (in M-221) have not been changed and will not be, WPB says, until an adequate quantity of bags for agricultural and other permitted uses is assured.

● **Wood Pulp Controls**—Revocation of wood pulp controls and allocations under the pulp order (M-93) will enable pulp users to get raw material without too much Government trouble. Revocation was recommended by the Wood Pulp Allocation Advisory Committee late in August when it became apparent that adequate supplies would be available in the fourth quarter without the order.

● **No Priorities on Paper**—Acting on the recommendation of the Over-all Paper Industry Advisory Committee, WPB has removed paper, paperboard and paper products from the provisions of PR-28, which placed these products under priorities. The paper manufacturing industry has operated for more than two years of war without use of priorities and without compliance procedures, the committee pointed out in recommending the removal of its products from the priorities order, and added that the use of priorities would not only work inequitably but that chaotic situations might result. Industrial cooperation, they said, together with the directive powers of M-241, can and will continue to meet Government and essential or emergency requirements.

Commenting on the lifting of the late-applied restrictions, B. R. Cancell, director of the WPB's Forest Products Bureau, said the industry itself would soon have to take over and follow the path to free private enterprise and full employment if a speedy transition and conversion were to be effected.

The United States is using about 300 lbs. of paper per capita, according to Rex Hovey, former director of WPB's Paper Division, the highest per capita rate in the world. With the coming of peace, this per capita rate may be expected to increase.

● **L-120 Out**—By the time this magazine is off the press and in your hands, it is expected that Limitation Order L-120, covering weights and grades of papers for various uses, will be revoked.

● **Cordage Fibres**—While the use of jute rope as a substitute for manila, sisal and henequen rope, the fibres of which remain in short supply, must be continued for some time, according to WPB, the improved supply of raw jute fibre has also enabled the Government to invite applications for permission to import jute Alparagatas (footwear with jute fibre soles) from any source. Burlap is now also allocated to new manufacturers.

● **V-Box Inventory Under Way**—Figures on the number of V-boxes being held by packers, manufacturers and the Army as a result of the drastic cutbacks in Army subsistence needs, probably will be available by the end of October, as a guide in determining the Army's policy in their disposition. The inventory was undertaken in response to requests from the canning industry. At this time, the Office of The Quartermaster General said, preliminary estimates and reports on the survey do not indicate that there will be a surplus of V-boxes if consideration is given to the proposal that they be stored for use against future requirements.

While there are instances where canners have either empty cans already packed in V-boxes or have already filled them with the finished product, the Army will treat these instances preferentially in the hope that adjustments can be made.

The industry, of course, is protected by letters of committment from the Government on all V-box purchases for canned fruits and vegetables and canners are being urged by the Government to coordinate closely with Quartermaster field buyers to accelerate the area adjustment of canners' stocks of export cases.

● **In or Near the Courts**—Now that Army and Navy needs have dropped sharply, Antitrust Division of the Justice Department probably will resume its proceedings against the open-mesh bag industry. The case was among some 25 antitrust actions which were held up on the ground that prosecution would interfere with the war effort. The indictment was brought in Denver in 1942 against Bemis Bag Co., St. Louis; Chase Bag Co., N. Y.; Fulton Bag and Cotton Mills, Georgia; Grand Rapids Fiber & Cord Co., and Frank W. Winne & Sons, Philadelphia. These firms made or sold virtually all of the 55,000,000 open-mesh bags turned out yearly in U. S. before the war—used almost entirely by vegetable growers and shippers.

Specific charges include one that the defendant companies sought to coerce the Grimes Co., Denver, a small maker, into selling only at prices and under conditions laid down by the major bag companies and that they refused to sell the Grimes Co. cordage when it would not agree.

Another case soon to come before the higher courts will decide whether a Federal Trade Commission cease-and-desist order against false advertising of a product is a full defense against prosecution on charges of false labeling under the federal Food, Drug and Cosmetic Act.

The issue first came to a head in a misbranding case instituted by the Food and Drug Administration in Indiana. The defendant, Willard Tablet Co., argued that the issues had already been decided in a proceeding before the FTC. The District Court agreed, the Government appealed and the Seventh Circuit Court upheld the lower court's decision.

In that case, the Justice Department declined to take the case up to the Supreme Court, but has now decided to appeal a similar case—U. S. vs. five cases of Capon Springs Water—to the Second Circuit in New York, following dismissal of an FDA seizure action. If the Second Circuit comes up with an opinion contrary to the Seventh, only the Supreme Court can break the stalemate.

These cases are indicative of the jurisdictional conflict that has been becoming more and more evident between the Justice Department and the Federal Trade Commission since Congress took advertising control out of the Food, Drug and Cosmetic Act of 1938 and gave it to the FTC. Control of labeling was reserved to FDA, but Congress was not successful in preventing these legal conflicts.

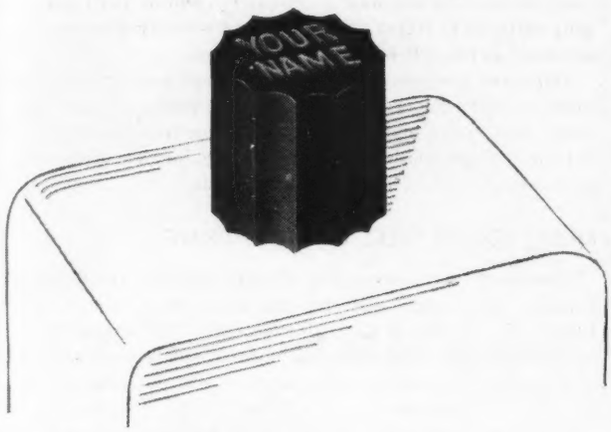
● **BRIEFS**—Shipments of machined parts, and other civilian goods which must be protected from moisture vapor, in packages utilizing silica gel and desiccant grade bentonite for moisture adsorption may be expected in the near future, as a result of WPB's removal of controls on these desiccants. Utilized widely in the shipment of war materials, mostly ordnance and aircraft parts, silica gel became so short in supply during war months that desiccant grade bentonite was developed as a wartime measure to supplement the supply of silica gel.

Kraft wrapping papers, bag papers and paper bags sold to the Armed Forces now are being sold on ceiling prices f.o.b. mill, rather than on the delivered basis heretofore employed. Primary beneficiaries are Eastern and Southern manufacturers shipping to the West Coast.

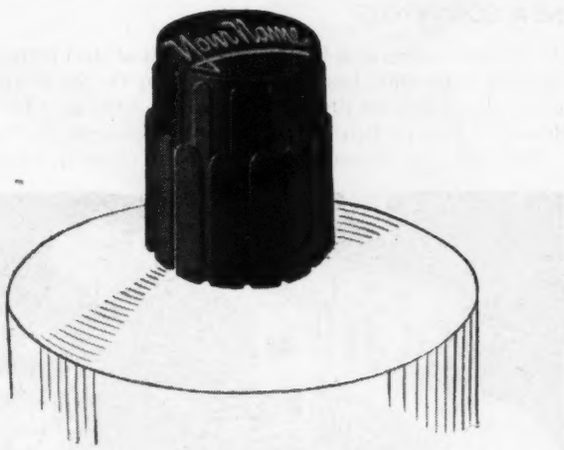
In view of the shortage of tin, there were some raised eyebrows here when it was made known that tin plate was among the sizable items of lend-lease cargo being shipped to France by the Foreign Economic Administration.

Packaging officials here have been advised that a program of research on specialized food packages, including those for butter, margarine, lard, shortening and frozen foods is in process under the direction of the recently formed Paraffin Carton Research Council, Chicago. An intensive investigation of butter packaging and merchandising is the first project to get under way, with actual research being carried on at the Universities of Minnesota and Wisconsin.

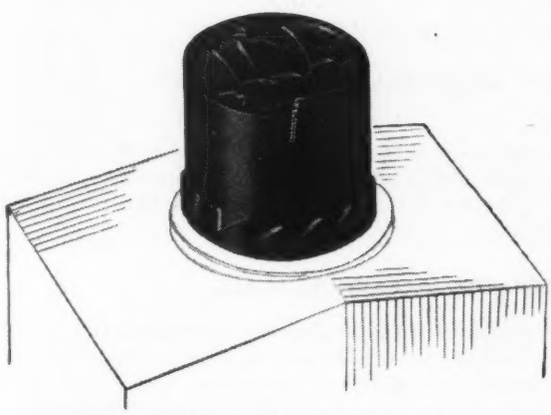
DISTINCTIVE DESIGN SUGGESTIONS FOR YOUR PRIVATE MOLD CAPS



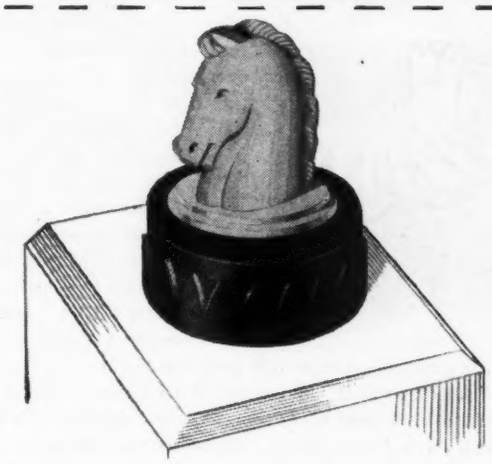
DIGNITY and simplicity keynote this modern, low-cost Armstrong's Artmold Cap. Your brand name can be depressed and filled in with eye-catching color.



CLEVER use of Artmold Cap designs can make your package look taller or shorter . . . help give them the individuality they'll need to compete in post-war markets.



CAMEO design possibilities in Artmold Caps are almost unlimited. They add extra style and distinction, step up sales of your package.



ARTMOLD Caps, with your exclusive sculptured design, will build customer recognition and demand for your "luxury trade" packages.

ARMSTRONG'S *Artmold* PLASTIC **CAPS**

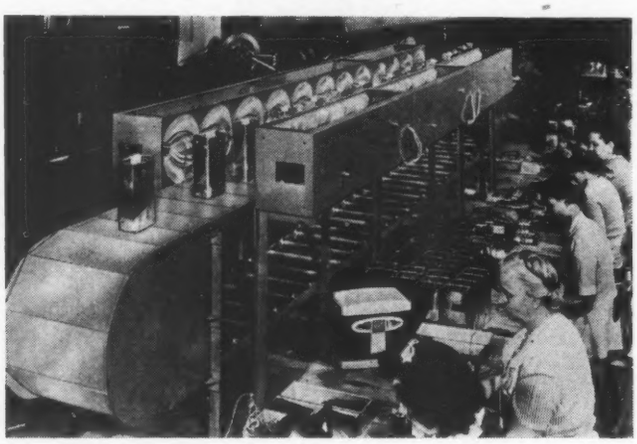
TO COMPETE SUCCESSFULLY in post-war markets, your packages will need every bit of extra style and distinction you can give them. You can add a lot of both with Armstrong's Artmold Caps. Get free design suggestions today by sending a sample or drawing of your package to Armstrong Cork Co., Glass and Closure Division, 5910 Prince Street, Lancaster, Penna.

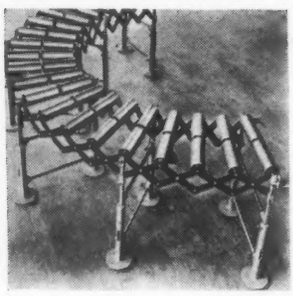
Equipment and Materials

NEW CONVEYORS

An all-steel conveyor belt, made of a series of steel plates linked together at the ends, has been announced by the Steel Parts Mfg. Corp., division of the Blackstone Mfg. Co., Chicago. The belt is driven by a simple drive sprocket that meshes with the hinges.

The conveyor, known as the "Steelok," (directly below) pre-





sents a flat working surface at every point, with no sag along the belt length and no open spaces between links. This feature makes it especially adaptable to assembly-line and packaging applications. The drive sprocket and motor are enclosed and the edges of the belt are provided with a guard rail, for safety. Belts are engineered for specific operations—load capacity is determined by weight and size of object to be carried; distance to be travelled; and speed of operation. Makers claim it proves both efficient and economical in handling very light as well as extremely heavy loads. There are no leather or rubber belts to wear out and should a belt plate become damaged, it may be quickly and easily slipped out and a new one inserted. Photograph shows application through infra-red heat.

The accordian-like, portable conveyor system (above, left), of Food Machinery Corp., Riverside, Calif., for use in packing houses, has many other industrial uses. The system, which may be easily put together by one attendant, has several unique features. Available in open lengths of 60 or 100 in., the sections can be folded, like an accordian, to 21 or 35 in. The shorter has four telescopic legs and the longer six telescopic legs—which permits movement of material by gravity alone. The split rollers permit material traveling down the conveyor to take S turns without falling off, or without the need for siding. Rollers come in widths from 10 to 18 in. and are built to carry a load up to 80 lbs. each. The system may be used for inter-plant transportation of semi-heavy material; removal of merchandise from inside buildings to waiting trucks as well as transportation of cartons from retail storage rooms to store shelves.

IMPROVED VERSATILE WRAPPING MACHINE

Package Machinery Co., Springfield, Mass., announces its completely redesigned all-purpose FA Model wrapping machine which has a variable speed of from 40 to 100 packages per minute, wrapping either cartons, open boats or flat objects on cardboard. The machine is designed to handle any type of wrapping material in roll or sheet form and is easily adjusted to wrap as many as ten different sizes of packages.

Improved features include: a new type paper feed; new and more sensitive paper stop that prevents light packages from tipping; new transport mechanism that permits shorter discharge belts and a new folding box which makes for easier adaptation to an existing machine for any size package.

KRAFT-BOUND STEEL BOX STRAPPING

"Fiber-Steel" box strapping (highly flexible steel band core sheathed in a tough, waterproofed kraft paper) is now available from A. J. Gerrard & Co., Chicago, Ill. The strapping may be applied directly to enameled or painted surfaces without danger of marring, the makers claim, and its wax-coated cover is scuff resistant and provides proper tension without excessive biting into a corrugated box. Trade marks and company names may be printed directly on it.

RAPID RECONVERSION

Announcements from Harris-Seybold-Potter Co., Cleveland, Ohio, tell of rapid reconversion to civilian production within a few days after V-J Day. Their plants are now concentrating on production of new machines in their regular line consisting of small presses, color equipment and new cutters. Deliveries will be on basis of priority of receipt of orders.

VINYL RESIN COATED APRON

A new lightweight, acid-, alkali- and oil-resistant apron, made from fabric, coated on one side with a black vinyl resin, useful in canning as well as other industries, has been announced by The B. F. Goodrich Co., Akron, Ohio. Available in two sizes, 29 by 35 in. and 35 by 45 in.

DECORATED ALUMINUM VIALS

The popularity which the decorated aluminum vial enjoyed soon after its introduction was short-lived due to the heavy demands on the raw material for war production. Victor Metal Products, Brooklyn, N. Y., tell us, that with the easing of the raw material, they may soon be turning them out again. Previously used by pharmaceutical houses, their obvious advantages, in addition to the permanently affixed lithographed label, such as lightweight, toughness, smaller shipping space, protection from light, resistance to heat and corrosion make them ideally suited for packaging.

FILMONIZE guards brake drums and other mechanical parts against deterioration from dirt, rust and fumes.

FILMONIZE withstands hot temperatures. Use it to protect propeller surfaces while screws are soldered.

FILMONIZE speeds buffing —assures a neater job. Just tape the end of one surface while buffing the other.

FILMONIZE holds masking in place—and helps shield metal sheets against spatter marks during spot-welding.

Tape . . . your most versatile worker

FILMONIZE Tapes do so many important things for so many important industries—that we can't begin to tell you about them all.

But we can tell you that FILMONIZE saves time and money wherever it's used.

Try FILMONIZE on troublesome, time-consuming operations in your plant. Or, better yet, send for our Tape Engineer—whose business it is to show you how to use tape most efficiently—and to design special tapes for particularly intricate jobs.

Meantime, your local distributor will show you the FILMONIZE line: Transparent Tapes, Colored and Multi-Colored Tapes, Printed Tapes, Riveting Tapes, Identifying Tapes, Splicing Tapes, Acetate Fibre Tapes, Metal Tapes, Specialty Tapes, Packaging Tapes. Widths of ½" to 18" throughout.

Filmonize
TRADE-MARK REG.

SELF-SEALING TAPES

INTERNATIONAL PLASTIC CORPORATION
Morristown New Jersey

Plants and People

The Sperry Corp., New York, has recently entered the automatic packaging machinery industry by purchasing half interest in **Wright's Automatic Machinery Co.** The transaction was announced by Wright's president, **Thomas D. Wright,** and was formally closed by **Capt. Thomas B. Doe,** Sperry vice-president. Among new or improved machines almost ready for market are a weighing device which employs a weighing principle new in automatic packaging machinery; a machine for wrapping, sealing and labeling cracker sandwiches; a machine for applying revenue stamps to bottles; a machine for weighing, packing and labeling dehydrated foods and other free-flowing materials; and machines for packing, labeling and stamping smoking tobacco.

Richard M. Krause, Jr., upon his release from the Army has resumed his duties with **Richard M. Krause, Inc.,** and has been elected a vice-president of that firm.

The Michigan Carton Co. of Battle Creek has completed plans and contracts for the construction of a new board mill on an 18-acre tract one mile west of its present plant and adjoining its present storage warehouse.

Henry A. Wolsdorf has resigned as chairman of the Container Coordinating Committee, WPB, and has joined the **Package Research Laboratory,** Rockaway, N. J., as Director of Sales Research. In his WPB position Mr. Wolsdorf served as a liaison man between the Armed Services and the packaging suppliers. He was the author of several articles contributed to MODERN PACKAGING and PACKAGING CATALOG.

Robert A. Morris recently resigned as Deputy Director of the Containers Division, WPB, to take up his appointment as advertising manager of the **Acme Steel Co.**

Celanese Corp. of America recently announced the election of **Edward W. Ward** as vice-president of **Celanese Plastics Corp.** of which he has been general sales manager.

Eugene F. Bertrand, after serving for a year and a half on the staff of WPB, has returned to **Owens-Illinois Glass Co.** as sales manager for the drug and chemical industries division, a position to which he was appointed in absentia.

Nils Anderson, Jr., formerly chief of the plastics section, WPB, has been appointed vice-president of the **Casein Co. of America.**

Capt. Stuart Irvine, recently returned from military service, has resumed his duties as president of the **Saniwax Paper Co.,** Kalamazoo, Mich.

Robert Collyer has been appointed advertising manager of **Roxalin Flexible Finishes, Inc.,** Elizabeth, N. J. Formerly Mr. Collyer was advertising manager for the Calco Chemical division of **American Cyanamid Co.**

The executive sales offices of **Plastics Papers Co.** have been moved to 188 W. Randolph St., Chicago, with **Richard E. Costello,** as sales manager.

The Eagle Printing Ink Co., a division of **General Printing Ink Corp.,** has announced the location of its new Chicago office at 2320 W. Kinzie St., Chicago. **A. Grayson Lynn** and **A. M. Albright** have joined the Western sales staff of **Fuchs & Lang Mfg. Co.,** another division of **General Printing Ink.**

Kimberly-Clark Corp. has announced that construction has been started on what, it is claimed, may be the most extensive commercial technical laboratory in the paper industry. The first step involves extensive repairs of an existing building which has been out of use since 1930 and which will provide 60,000 sq. ft. of additional space. **H. A. Rothchild,** long-time technical director, will direct the new facilities. At the same time, the company announces the closing of its Washington office with **L. E. Pasek,** who has been in charge, returning to Neenah to assume his duties as Kimsul product engineer.

R. D. Adams

Richard D. Adams, formerly a packaging engineer with **Minnesota Mining and Mfg. Co.,** has joined the sales staff of the **Fitchburg Paper Co.,** Fitchburg, Mass. and will be in charge of all packaging activities of the Decotone products division. **John F. Harrington** also joined the organization in charge of the sale and development of decorated and surface-treated papers.

Swift Canadian Co., Ltd., is constructing facilities at the Toronto plant for the manufacture of bone glue and other glue and adhesive products.

Continental Can Co., Inc., in line with an expansion policy to take care of postwar business, has announced the purchase of a property near **Weirton, W. Va.,** as the site of what the company claims will be one of the largest can-making plants in the industry. Plans are also complete for the addition of two buildings to the **Van Wert, Ohio,** plant and construction contracts have been placed to double the operations of the **Reading, Pa.,** plant. These last two are for the **Container Co.,** a division of Continental. In addition, all the stock of the **Gould Paper Co.,** Lyons Falls, N. Y., has been acquired by Continental, permitting considerable expansion in the company's operations in paper and plastics.

A recent personnel change in Continental is the appointment of **T. A. Grosse** as central division manager of Decoware sales.

The Plymold Corp. of Lawrence, Mass., has completed its plans to manufacture many items from molded plywood including packaging materials.

Wrapade Machine Co., Inc., has acquired a new plant at 778 Bergen St., Brooklyn, for the manufacture of bench and power crimpers, sheet gluers and handbag-making machines.

The New York establishment of the **Harris-Seybold-Potter Co.** has moved to 75 Varick St.

The employees of the **Ohio Boxboard Co.,** Rittman, Ohio, were awarded the Army-Navy "E" at a Labor Day celebration.

The Valley Research Corp. of Montague, Mich., has added a second story to its laboratory which will provide 7000 sq. ft. more space in which to continue its research, experimentation and testing of paper combinations with special emphasis on moisture-vapor-barrier materials.

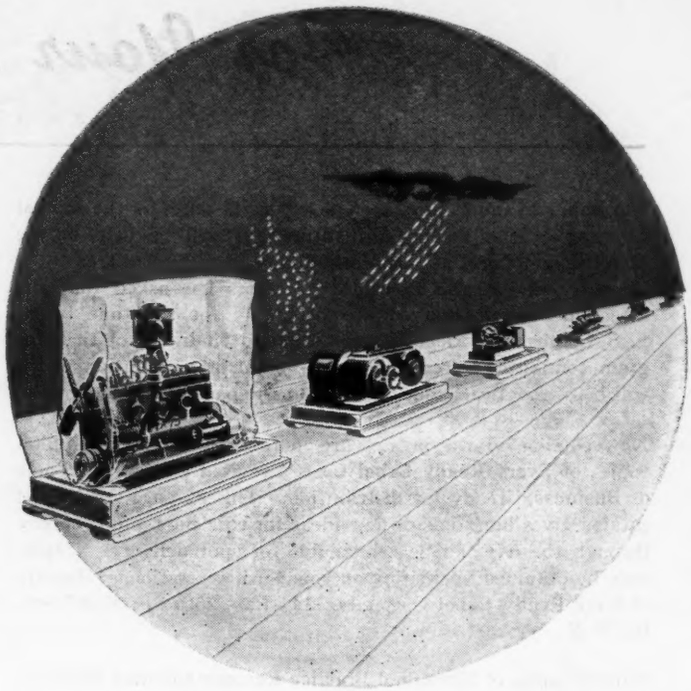
Charles A. Dickhaut has been named chief of research and development for the **John Waldron Corp.,** New Brunswick, N. J.

Leonard A. Yerkes, general manager of the rayon department of **E. I. du Pont de Nemours & Co.,** has retired and will be succeeded by **Benjamin M. May,** his chief assistant.

Reynolds Metals Co. has announced the financial setup and the official personnel of the company's new Mexican subsidiary, **Reynolds Internacional de Mexico, S. A.** Initially, the new plant will produce aluminum sheet and aluminum, tin and lead foil for the Mexican and Latin Ameri- (*Continued on page 198*)

Stored FOR TOMORROW

Shipped FOR TODAY



Both ready to use

if—as—and when!

Tools of war—guns, engines, parts, machinery—are not being junked this time. They're being carefully put away—*fully protected*—in Saran Film. We fervently hope they'll never be "called up" again. But *if*—*as*—and *when*—they'll be ready.

You've come to know this superior wartime packaging development as Method II. Its immediate advantages for *peacetime packaging* are apparent. Metal parts or assemblies are placed in a Saran Film bag. The unit may be mounted, desiccant added, air removed and bag sealed—you have *complete* modern protection against corrosion, dirt, dust, grease and grit. This simple method can make your products ready for action in *today's* market—shipped or stored—*anywhere.*

Saran film

KEEPS MOISTURE IN ITS PLACE

PRESENT AND POTENTIAL USES: Method II packaging, dehydrated packages for metal parts and assemblies, packing corrosive and anhydrous chemicals, bottle closure liners, flexible containers requiring good moisture vapor and gas impedance, etc. Shows much promise as important visual sales aid.

PROPERTIES AND ADVANTAGES: Highest degree protection against moisture vapor transmission; three times greater than comparable materials. Soft, pliable, yet tough and strong. Corrosion-resistant. Clear, transparent film. Modified heat sealing equipment recommended. Thickness range .001 to .003 inch.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

DOW

PLASTICS

FOR BETTER PACKAGING:
SARAN FILM • ETHOCEL SHEETING • STYRON

For Your Information

November 26 and 27 have been picked as the dates for the **Annual Meeting** of the **Packaging Institute.** It will be held in the **Hotel Commodore** in New York City. In view of the crowded hotel conditions, the Board of Directors has asked that the attendance be limited to members only for the time being. **F. S. Leinbach** of **Riegel Paper Corp. and chairman** of the **program committee,** already has a program in preparation which will be of practical value to those in the packaging industry.

Now coming off the presses are more than a quarter million copies of **Every Ready Label Corp.'s** revised edition of **"Tools of Business,"** ready for distribution. This 32-page stock-label catalog gives hundreds of new ideas for efficiency and economy through the use of labels, available for spot delivery. Copies may be obtained by writing on your business stationary directly to Ever Ready Label Corp., 141–144 East 25th St., New York, 10, N. Y.

Printed copies of **Simplified Practice Recommendation B209-45, Peanut Butter Packages and Containers** are now available, according to an announcement of the **Division of Simplified Practice, National Bureau of Standards.** This recommendation, effective from June 1, 1945, lists the $^1/_2$ lb., 1 lb., $1^1/_2$ lbs. and 2 lbs. as the standard stock sizes for retail packages in jars; also the 8-, 10-, 12- and 14-oz. avoirdupois sizes for retail packages in tumblers. Overflow capacities, maximum weight of glass, dimensions, finishes and closures are prescribed for these jars and tumblers. Copies of Simplified Practice Recommendation B209-45 may be obtained from the Office of the **Superintendent of Documents, Government Printing Office, Washington, D. C.,** for 5 cents each. A discount of 25% is available on orders for 100 or more copies.

To help industry locate qualified **Massachusetts Institute of Technology** graduates who will be available for employment within the next year or two, the Alumni Assn. has, with the assistance of the Placement Bureau, set up Placement Committees throughout the country. These local committees will have information on men wishing to obtain employment within their area. The Placement Bureau in Cambridge will continue to function as usual and will have a complete list of men available in all parts of the country.

The Lithographic Technical Foundation has issued a revised edition of **Research Bulletin No. 6, "The Albumin Process of Photolithography,"** by **Robert F. Reed** and **Paul W. Dorst.** One of the most popular and complete research publications ever issued by the foundation, this 160-page edition, in the new lithographed style, embodies all the latest improvements in technique and method. Its thirteen chapters, profusely illustrated, give practical instructions for the preparation and treatment of albumin plates, formulae for the various solutions required and clear instructions covering both the things to be done and things to be avoided in making and using the plates. A considerable portion is also devoted to a detailed description of the interesting and constructive research upon which the above instructions are based.

The National Paper Box Manufacturers Assn. has been conducting a special campaign through its local manufacturers to pay special tribute to the employees who have been able to make such a phenomenal record in spite of shortage of production materials and acute labor situations. The set-up box industry, represented by over 3,000 manufacturers, has supplied all types of packaging for the war effort and in spite of the shortage of paper and paperboard has been able to keep up to quotas in most cases.

Graham Adams, newly elected president of the **National Dehydrators Assn.,** reports that Government war agencies will probably spend over **$150,000,000** this fiscal year for dehydrated vegetables, pointing out that the industry has been expanded over fifty-fold during the past three years to meet war requirements and the rapidly growing commercial markets for its varied products.

National Adhesives has revised and reprinted its handbook, **"Resyn Adhesives—When and How to Use Them."** The new, enlarged booklet contains additional information on the selection and use of synthetic resin adhesives for peacetime packaging, converting and assembling operations. Of particular interest is the section on definitions of the various classes of synthetic resin adhesives—lacquers, hot-melts and emulsions. Thermoplastic and thermosetting types are also defined and the properties of all are detailed. This revised edition is timely, as many "Resyn" adhesives, which have been restricted to essential war applications, are now available to manufacturers of civilian goods—including luxury items. Copies may be obtained by addressing National Adhesives, 270 Madison Avenue, New York 16, N. Y.

The Point of Purchase Advertising Institute recently held its annual and its directors' meeting. It was voted to dissolve the Point of Purchase Advertising Institute as an Illinois Corp. and incorporate in New York. It was also voted to increase the number of the board from 9 to 19. Serving as directors now are four lithographers, four mounters, three representatives of other phases of display production and eight advertisers (appointed by the **Assn. of National Advertisers**), instead of the four in the previous set-up. Newly elected officers of the Institute are: president, **Homer Johnson of Snyder & Black;** first vice-president, **Frederick L. Wortz, president of Window Advertising, Inc.;** second vice-president, **Edgar Routner,** of **William Howe & Co.;** and **George Rose** of the **Mounting and Finishing Co.** is the new secretary and treasurer. **Clifford E. Hodder** remains as executive secretary.

The 1946 edition of the **Market Data Book** is ready for distribution to subscribers of **"Industrial Marketing."** Further information about this 500-page book of marketing information can be had from Industrial Marketing, 100 E. Ohio St., Chicago.

Super Market Institute, Inc., recently announced the establishment of a research and statistical department with **Martin Wiberg** as director.

Shulton, Inc., in planning its new building in Clifton, N. J., is paying special attention to packaging problems. Not only has the packaging-line production been given consideration, but also the actual manufacture of both plastic and paperboard containers as well as the printing of the packages. With the release of paperboard, Shulton is preparing to place on the market its selection of gift sets which have not been seen for two years. They are in production now and are expected to be on the counters by Christmas.

September marked the twentieth anniversary of one of the best-known house organs in American industry, the **Phoenix Flame,** publication of the **Phoenix Metal Cap Co.**

The first set of sample booklets showing the decorative papers of **Hampden Glazed Paper and** (*Continued on page 198*)

On boxes, cartons, bags and such—

Some Texcel adds a modern touch!

To seal smart-looking packages,
To wrap, protect and hold,
Use Texcel Tape—so quick to stick
It's got most folks pre-sold.

"TEXCEL" REG. U. S. PAT. OFF.

INDUSTRIAL TAPE CORPORATION

New Brunswick, N.J.

U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at ten cents each in currency, money order or certified check; postage stamps are not accepted.

Portable Container for Compressed Gases, S. W. Alderfer (one half to E. D. Andrews, Akron, Ohio). U. S. 2,380,372, July 31. A parachute pack for use at high altitudes, including a cushion portion and a parachute-container, and containing an oxygen storage means positioned within and surrounded by said cushioning material.

Sealed Package, W. K. Berthold (to Hartford-Empire Co., Hartford, Conn.). U. S. 2,380,395, July 31. A sealed package comprising a glass container having an opening at the upper end thereof and provided with an external annular flange on its upper end portion and with an external annular side sealing surface thereon above said flange, equipped with glass closure cap having skirt portion extending downwardly over container.

Sealed Package, W. K. Berthold (to Hartford-Empire Co., Hartford, Conn.) U. S. 2,380,396, July 31. A sealed package comprising a glass container having upper end portion formed with a vertical opening, with external upwardly supporting facing surface formed thereon.

Method of Making Fibre Container Parts, J. M. Hothersall (to American Can Co., New York, N. Y.). U. S. 2,380,440, July 31. A method of making composite fibre container end-members, which comprises feeding along a predetermined path of travel a web of fibre stock having spaced areas for a plurality of container end-member closure elements arranged in longitudinal and transverse rows.

Can Body Necking-Machine, J. F. Peters (to American Can Co., New York, N. Y.). U. S. 2,380,462, July 31. A machine for necking-in the body walls of tubular fibre containers, using combination of plurality of contiguous rotatable turrets each having peripheral pockets for receiving and continuously advancing container bodies along a predetermined path of travel.

Closure Hold-Down Spring Clamp for Packing Jars, H. W. Ingle (to Hartford-Empire Co., Hartford, Conn.). U. S. 2,380,443, July 31. The combination with a packing container which is open at its upper end and has an upper end portion provided with an external bead thereon adjacent to said upper end, a closure cap for the container having a skirt extending downwardly over the upper portion, and equipped with spring clamp formed to extend across the closure cap.

Packaging Apparatus and Method, W. D. Yound, Greenville, S. C. (to T. B. Taylor et al.). U. S. 2,380,624, July 31. That method of packaging a surgical dressing having parallelized fibres extending longitudinally of the dressing, which comprises confining all sides of the dressing, exerting endwise compression to reduce the overall length of the dressing short of the elastic limit of the fibres.

Carton Closing Mechanism, G. I. Hohl, East Orange, N. J. U. S. 2,380,758, July 31. A carton closing mechanism having means for progressively advancing cartons through means to angularly bend carton end closure flaps and their tuck portions whereby to direct the latter toward open ends of the carton bodies.

Manufacture of Sheet Materials, R. G. Jackson, Woodbury, N. J. U. S. 2,380,762, July 31. A method of manufacturing decorative impregnated sheet material which method comprises piercing a fibrous sheet the surface of which is resistant to impregnation by fluid coloring or toughening penetrants.

Apparatus for Filling Containers with Milk and Other Liquids, H. M. McDonald, Meeniyan, Gippsland, Victoria, Australia. U. S. 2,380,771, July 31. An apparatus for filling a series of containers having air-tight closures thereon with milk under a partial vacuum from a source of supply comprising a distributing pipe of substantial diameter adapted to be supported above all of the containers.

Nonrefillable Closure for Bottles and Like Containers, M. D. Diaz, Habana, Cuba, U. S. 2,380,825, July 31. A non-refillable closure for a bottle comprising a cap having a skirt portion surrounding the neck of the bottle, a top portion of reduced diameter, a shoulder overlying the mouth of the bottle between the skirt portion and top portion, and a flanged cup having an opening in the bottom, with a perforated disc having teats directed towards the interior of the cup.

Art of Packaging, M. Bennett (to Milprint, Inc., Milwaukee, Wis.). U. S. 2,380,913, Aug. 7. The method of producing a composite wrapper, which comprises loosely inserting the major portion of a flexible bag within a relatively rigid carton so that the mouth portion of bag projects outwardly beyond the carton end opening.

Art of Manufacturing Pouches, C. K. Billeb (to Milprint, Inc., Milwaukee, Wis.). U. S. 2,380,914, Aug. 7. The method of producing pouches from approximately rectangular sheets of heat-sealable material.

Strip Feed, A. E. Borton (to Associated Patentees, Inc., Ampere, N. J.). U. S. 2,380,918, Aug. 7. A slide feed, comprising supporting rods, a side block reciprocating on said rods, a drag carried by said block and engaging said rods with front and back stops for said slide block and supporting rod.

Stable Packaged Pharmaceutical Preparation and Method of Preparing the Same, V. Kitter, New York, N. Y. U. S. 2,380,970, Aug. 7. Method of making a pharmaceutical preparation and sealing the materials in an air tight wrapper.

Method of Canning, R. H. C. Moeller, Oak Park, Ill. U. S. 2,380,984, Aug. 7. In the art of canning, the method which comprises moving a sealed empty can through a hot sterilizing chamber which is at a temperature sufficiently high to sterilize the inside of the can, then to a cooling bath to cool quickly, then to a sterile gaseous atmosphere, thence piercing the can to form a filling opening, filling said opening with sterile product and then sealing said opening while can is still in a sterile atmosphere.

Lined Carton, W. H. Arthur (to Container Corp. of America, Chicago, Ill.). U. S. 2,381,026; Aug. 7. A tubular paperboard carton capable of being collapsed into substantially flat form along two oppositely disposed longitudinal fold lines in the side wall thereof, and an inner bag of flexible sheet material having a bottom portion substantially conforming in size and shape to the inside configuration of the carton, and adapted to lie substantially perpendicular to its side wall.

Wrapping Machine, J. S. Pecker and H. A. Simpson and A. S. Kirshner (to Celanese Corp. of America, a corporation of Delaware). U. S. 2,381,078, Aug. 7. A device for applying wrappers to yarn packages, comprising a wrapping head including spaced rollers for applying the wrapper to the yarn package and means for rotating said rollers at a constant speed.

Method and Apparatus for Packing, M. Weisman (to Mabe Corp., New York, N. Y.). U. S. 2,381,091, Aug. 7. A method of packaging tea, coffee or the like in an intermittent process, which comprises feeding a given length of two sheets of different width in face to face relation with each other intermittently, forming the wider sheet to produce a pouch effect against the narrower sheet, cementing the edges and the center length of the sheets together longitudinally simultaneously along the whole of such lengths.

Container, R. E. Lowey (to Container Corp. of America, Chicago, Ill.). U. S. 2,381,067, Aug. 7. In a collapsible container formed from a single blank of sheet material, a bottom wall, side and end walls formed on said bottom wall and movable thereover when said container is in a folded condition, said end walls having foldable triangular-shaped wings on their outer edges.

Closure, P. G. Coleman, Cincinnati, Ohio. U. S. 2,381,207, Aug. 7. A closure comprising the combination of a plurality of members rotatable about a common axis, and each having a radial slot therein, one end of which is concentric with said axis, and each having a radial slot therein one end of which is concentric with axis.

Pressing Machine for Ends of Boxes and Covers, W. P. Osgood (to Boston Machine Co., Lynn, Mass.). U. S. 2,381,364, Aug. 7. A box-ending machine comprising a frame, two stationary anvils supported on said frame, each said anvil being shaped to fit into an end of a box to be pressed.

Method of Constructing Containers, M. O. Kuhn (The Firestone Tire & Rubber Co., Ohio). U. S. 2,381,385, Aug. 7. A method of constructing a single wall container which comprises forming a pair of cup shaped end sections of substantial length, a cylindrical center section by shaping a strip of metal into a cylindrical ring by abutting and welding the ends thereof, forming a girth band by shaping a strip of metal into a cylindrical ring, all sections being automatically welded.

Method of Making Containers, M. O. Kuhn (to The Firestone Tire & Rubber Co., Akron, Ohio). U. S. 2,381,386, Aug. 7. Method of manufacturing a single walled metallic container equipped with bung apertures which is welded to the medial container section.

Method of Producing Can Bodies, W. A. Meyer (to American Can Co., New York,

VISUAL PACKAGING
SHOWBOX
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Showboxes, giving added eye-appeal in the highly competitive period ahead, will put your product out in front. The impact of a rigid transparent plastic container influences merchants and consumers alike.
Volume production of custom-designed, plain or imprinted Showboxes, make them economical.
Functionally, they do a better packaging job and embellish your brand name with point-of-sale advertising.
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RIGID, TRANSPARENT, PLASTIC SHOWBOXES ARE AVAILABLE WITH METAL OR CARDBOARD BOTTOMS, METAL OR PLASTIC LIDS.
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CHICAGO 520 N. Michigan Ave.
NEW YORK 489 Fifth Ave.
DETROIT 1951 East Ferry St.

N. Y.). U. S. 2,381,460, Aug. 7. A method of producing a multiple-ply fibre container body having an inner moisture-proof and greaseproof liner, which comprises forming a tuck in a liner blank adjacent an end thereof, inserting into said tuck an edge of a fibre body blank coated on one side with adhesive, and simultaneously wrapping said liner and body blanks into container body shape.

Shipping Containers, G. A. Moore (to National Biscuit Co., New York, N. Y.). U. S. 2,381,508, Aug. 7. A container having an open ended rectangular body formed from a single blank of fibrous material scored to provide five panels two of which overlap to form one side wall of a double thickness at least in part, an inner cover made from fibrous material, and equipped with waterproof sealing compound coating and sealing the contacting edges and surfaces of body and covers.

Carton Partition Means, W. H. Inman (to Bloomer Bros. Co., Newark, N. J.). U. S. 2,381,543, Aug. 7. A carton partition device comprising a blank formed with longitudinal fold lines spaced from each other and from opposite margins of said blank to provide two side portions and an intermediate bottom portion, and having cuts therethrough at spaced parts of said fold line.

Apparatus for Charging and Sealing Tubular Containers, G. L. McFarland, Jr. (to General Electric Co., a corporation of New York). U. S. 2,381,764, Aug. 7. Apparatus for charging a metal container including a tube having an end portion provided with a layer of solder on its inner wall, and means for heating said end portion to melt said solder.

Method of Making Bag Bodies, R. J. Williams (to Bemis Bro. Bag Co., Minneapolis, Minn.). U. S. 2,381,850, Aug. 7. A method of forming fold lines in the walls of an empty vat bag body to facilitate squaring the bag body when filled.

Method and Apparatus for Making Hood Caps, K. R. Allen (to American Seal-Kap Corp., Wilmington, Del.). U. S. 2,381,-851, Aug. 7. The method of forming a milk bottle cap or the like having a central depressed diaphragm, a pouring lip housing and an outwardly extending skirt from a blank.

Container, I. L. Wilcox and R. Horning (to Oswego Falls Corp., Fulton, N. Y.). U. S. 2,382,035, Aug. 14. A container comprising a tubular body shell formed of fibrous material, a band member formed of fibrous material and rolled inwardly at one end to form a closed bead, said band member encircling the lower end portion of said shell with the end edge thereof positioned between said bead and the wall of the band.

Closure for Containers, H. Grabener, Cologne-Ehrenfeld, Germany (vested in the Alien Property Custodian). U. S. 2,382,051, Aug. 14. Means for fixing a cover on a metal receptacle comprising a contractible channeled ring for pressing the cover and receptacle together when the ring is contracted, means for contracting the ring, including a lug at each end of the ring.

Cover Lock for Cans, L. L. Marohl, St. Paul, Minn. U. S. 2,382,083, Aug. 14. A cover-lock for a cylindrical can provided with a cover having a skirt formed with an outwardly projecting bead about its lower edge and adapted to telescope over the upper portion of the can, said cover-lock comprising a can-encircling contractible-expansible hoop adapted when expanded to be axially guided by and along the can into cover locking relation.

String Binder Assemblage and Package, H. W. Gordon (to U. S. Envelope Co., Springfield, Mass.). U. S. 2,382,143, Aug. 14 A package comprising an outer box container, and a coil of detachably connected string binder units within said container, each unit consisting of a flexible base member, a button attached thereto, and a flexible string secured thereto at one end at junction of the button and its base member, and so arranged that removal of the string prevents entanglement of the remaining strings.

Sealing, Crimping, and Scoring Rollers for Packaging Machines, L. L. Salfisberg (to Ivers-Lee Co., Newark, N. J.). U. S. 2,382,175, Aug. 14. In a packaging apparatus, a pair of rollers to receive layers of packaging material between their peripheries, portions of the peripheral surface of each roller being formed to engage and press one of said layers of packaging material into contact with the other layer and each roller having serrations on its periphery to intermesh with the serrations on the other roller.

Collapsible Cellular Carton, K. T. Buttery (to Sutherland Paper Co., Kalamazoo, Mich.). U. S. 2,382,202, Aug. 14. A collapsible cellular carton comprising side walls each having a cover member hingedly joined to its outer edge, bottom members hingedly joined to the lower edges of the side walls and having a series of longitudinally spaced transverse slots therein.

Carton, I. L. Lesavoy, Allentown, Pa. and I. Brecher, New York, N. Y. U. S. 2,382,240, Aug. 14. A container with an outer casing and at least two retainer units disposed within the casing, each unit comprising at least two spaced bendable walls with supporting means.

Carton and Package, T. C. Gevaart, Kiel, Wis. U. S. 2,382,308, Aug. 14. A cheese box comprising spaced side walls and a bottom somewhat shorter than side walls, and a means providing end walls connecting said side walls and spaced from said bottom at one end of the box, equipped with a false end flap extending upwardly within the box and downwardly opening knife-receiving compartment.

Package, W. Mitchell, Jr., Scarsdale, N. Y. U. S. 2,382,368, Aug. 14. A container comprising a single sheet of material folded to provide front and rear walls, side walls; and oppositely bowed end walls interconnecting said front and rear walls, said front wall being convex and said rear wall being concave.

Easy Opening, Reclosable Container, C. H. Bloedorn (to Continental Can Co., Inc., New York, N. Y.). U. S. 2,382,378, Aug. 14. In a container, a body having an open end defined by an outwardly turned hem, a cover of the pry-off type having a heel portion insertible in said open end and an outwardly turned flange terminating in an inwardly turned bead, and sealing compound applied to the under surface of said flange only and extending from said heel portion over to and in contact with the inwardly turned extremity of said bead.

Composition for Lining Can Ends, J. E. Robinson and F. H. Bopp and P. W. Millelot, Jr. (to American Can Co., New York, N. Y.). U. S. 2,382,443, Aug. 14. A compound for lining the sealing flanges of can ends and the like which is resistant to animal and vegetable oils.

Package of Liquid Material and Container Therefor, T. R. Baxter (to Standard Brands, Inc., New York, N. Y.). U. S. 2,382,536, Aug. 14. A container for liquid materials comprising, in combination, an outer frangible paper board casing having a certain internal cross-sectional dimension and semi-rigid supporting walls, and an inner substantially leak-proof bag of puncture-resisting closely woven cloth-coated on the inside with sealing material.

Shipping Container and Dispenser for Soda Straws or the Like, W. E. Amberg (to Universal Paper Products Co., Chicago, Ill.). U. S. 2,382,597, Aug. 14. A combined shipping container and dispenser adapted for shipping and dispensing articles such as soda straws and the like, comprising a carton, a predetermined area in a side wall of said carton adapted to form a dispensing opening when said wall area is removed.

Container, G. A. Moore, New York, N. Y. U. S. 2,382,573, Aug. 14. A method of making tubular formations to be converted into hermetically sealed packages after filling with a food or the like.

Fish Packing Machine, K. Kurxhin, Berkeley, Calif. U. S. 2,382,729, Aug. 14. A fish packing machine comprising a main frame, a pair of spaced fish conveyors arranged in the frame, a can conveyor between the fish conveyors, carriers arranged in the frame to move from each fish conveyor to the can conveyor, clamp mechanism on each carrier, and means for actuating the conveyors and carriers.

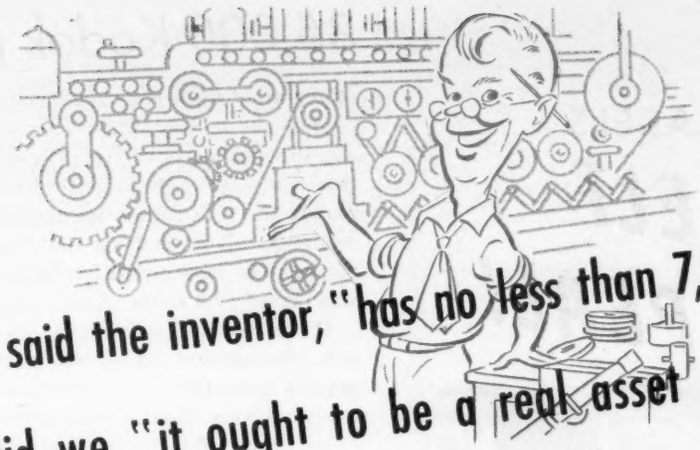
Adhesive, J. C. Little (to Hercules Powder Co., Wilmington, Del.). U. S. 2,382,-731, Aug. 14. An adhesive tape comprising a cellulosic sheet coated with a tacky, pressure-sensitive adhesive composition of triethylene glycol ester of hydrogenated rosin, rubber and zinc oxide.

Label, C. Mason, Beverly Hills, Calif. U. S. 2,382,736, Aug. 14. In a label whose undersurface is coated with a normally tacky adhesive, means for mounting the label in a manner to be readily applied to a surface to be labeled.

Container, J. R. Richards and C. W. Evert (to Downing Box Co., Milwaukee, Wis.). U. S. 2,382,819, Aug. 14. A container having side and end walls, each end wall having an upper edge portion folded downwardly on the outer side of the end wall and then upwardly to provide an upwardly opening channel, there being a slot extending downwardly from the upper edge of each end wall.

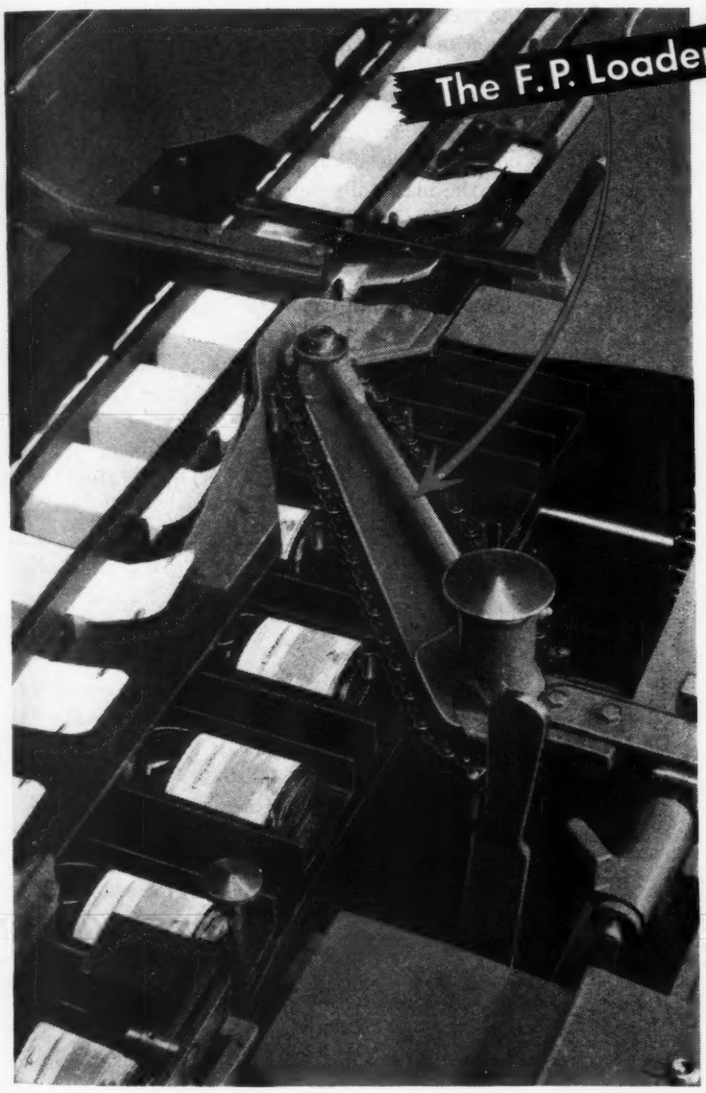
Shipping and Display, High Pack Container, J. A. McCormick (to Fruit & Product Packing, Inc., Indianapolis, Ind.). U. S. 2,382,891, Aug. 14. In a conventional four sided, corrugated board shipping and display box having cover forming flaps on each wall and normally foldable inwardly therefrom for box closure purposes and subsequently foldable outwardly and downwardly for content display purposes.

Laminating Apparatus, R. J. Williams (to Bemis Bro. Bag Co., St. Louis, Mo.). U. S. 2,382,930, Aug. 14. Laminating apparatus comprising means for progressively bringing together two webs of material from separate sources, means for applying spaced lateral bars of adhesive on the one web, means for applying a continuous strip of adhesive near one edge of said web, said strip joining one set of ends of said bars and means for bringing said webs together while in motion with said adhesive located between the webs.



"My machine," said the inventor, "has no less than 7,916 moving parts."

"Splendid," said we, "it ought to be a real asset in some museum."



. . is simple and efficient !

This patented unit performs the vital function of inserting the load into the carton. For bottles, jars, soap, razor blades and comparable articles, it is the simplest, fastest, most gentle and *the most satisfactory* loading mechanism ever devised.

It hasn't a single cam, eccentric, slide or slide bearing to wear or get out of order.

It does not extend beyond the frame of the machine, and takes no more room than a man's forearm. With its constant, rotary movement it is unequalled for speed and for gentle handling of the load. Even at speeds of 200 per minute it is just "loafing."

If the load is oversized and resists entering the carton, the machine automatically stops and the F. P. loading arm automatically swings back out of the way. This prevents any jamming or breaking of the load and allows the operator to remove the defective piece immediately.

Most of America's automatically cartoned products are Jones cartoned—let us show you how efficiently they operate.

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GIVE YOUR LABELS

SHELF APPEAL!

Under today's marketing of food products, your label assumes a greater importance than ever before. Consumers are buying *from the shelves* today. Does your label entice those buyers to choose *your* brand . . . does it have *shelf appeal?*

Let our merchandising specialists redesign your labels to incorporate all the latest selling features and yet retain your established brand identity. Send for our new book, "The Selling Power of FULL Color." It shows how you can easily use FULL Color to do a better selling job—in your labels as well as in your advertising material.

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LITHOGRAPH CORPORATION
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Offices in Principal Cities

35,000 Kodak packages . . .

(***Continued from page 100***) manager, the vice-president in charge of sales and advertising, the general traffic manager, the director of advertising operations, the assistant vice-president and assistant general manager and all of the plant managers. The other meetings included general superintendents, superintendents and superintendents' staffs. About 250 persons in all were familiarized with the plan before it was turned over to top management for final approval.

It will be another year, the company believes, before the new organization set-up will be in full operation. At the present time, the GPSA specifications are being written for every package that is used under normal operating conditions. Since this means more than 35,000 specifications, the magnitude of the activity is easily seen. It is hoped to use the company's own microfilm to save storage space in filling the specifications.

One of the greatest single benefits of the plan will be the standardization of materials, containers and printed matter that can be and already have been effected by the new system.

Complete review of all packages in the Kodak family will be another major project during the coming year with the possibility of complete redesign from an appearance standpoint. As quickly as the material supply situation clears, attention will be given to using materials that had been dispensed during the war and to package revisions that will include many of the improved materials developed as the result of the war. The improvement of quality control methods is also being given further study under the new plan.

This new system instituted at Kodak is another example of growing recognition by top management of the need for packaging divisions with clearly defined functions. It is the most opportune time to put such plans into effect when all industry is making a fresh start toward a shining future.

Polyvinyl . . .

(***Continued from page 161***) stable to light. Polyvinyl acetate resins are soluble in a number of organic solvents and adhere well to a wide variety of materials. In the pure form, these resins are considered to be non-toxic, but the possible toxicity of modifying agents should, of course, be considered.

Modifications—The usual solvents for polyvinyl acetate include the lower boiling alcohols, esters, ketones, aromatic hydrocarbons and several chlorinated hydrocarbons. The resins are insoluble in water, petroleum hydrocarbons, animal and vegetable oils and fats and polyhydric alcohols. Most of the ester type plasticizers commonly used in lacquers are suitable for use with polyvinyl acetate. Examples are dibutyl phthalate, tricresyl phosphate, "Flexol" 3-GH and "Santicizer" B-16. Properties such as compatibility, tensile strength, flammability, toxicity, tack and light stability govern the choice of plasticizers.

The water resistance of films produced from polyvinyl acetate emulsions can be improved to a small degree simply by heating for a few minutes at temperatures slightly above the softening point, or to a greater degree by adding to the emulsion 1 or 2% of a chromium salt such as sodium dichromate or chromic acetate and then heating the resulting film at about 100 deg. C. for a few minutes.

Packaging applications.—The principal packaging applica-

WIRZ COLLAPSIBLE TUBES FOR YOUR CREAMS, PASTES, POWDERS, LIQUIDS

INCREASE EYE-APPEAL, PROTECT YOUR PRODUCT, ADD CONVENIENCE

Whether your product is a newcomer or a well-established one, you can increase its eye-appeal and its convenience and at the same time keep it free from contamination in attractive, sanitary, self-dispensing WIRZ Collapsible Tubes. Designed with walls of uniform thickness, correct structure and orifice, WIRZ Tubes take decorative inks and lacquers beautifully. Self-dispensing, convenient, they prevent waste, protect your product and your customer good-will. Let us help you plan now for this extra appeal, protection and convenience.

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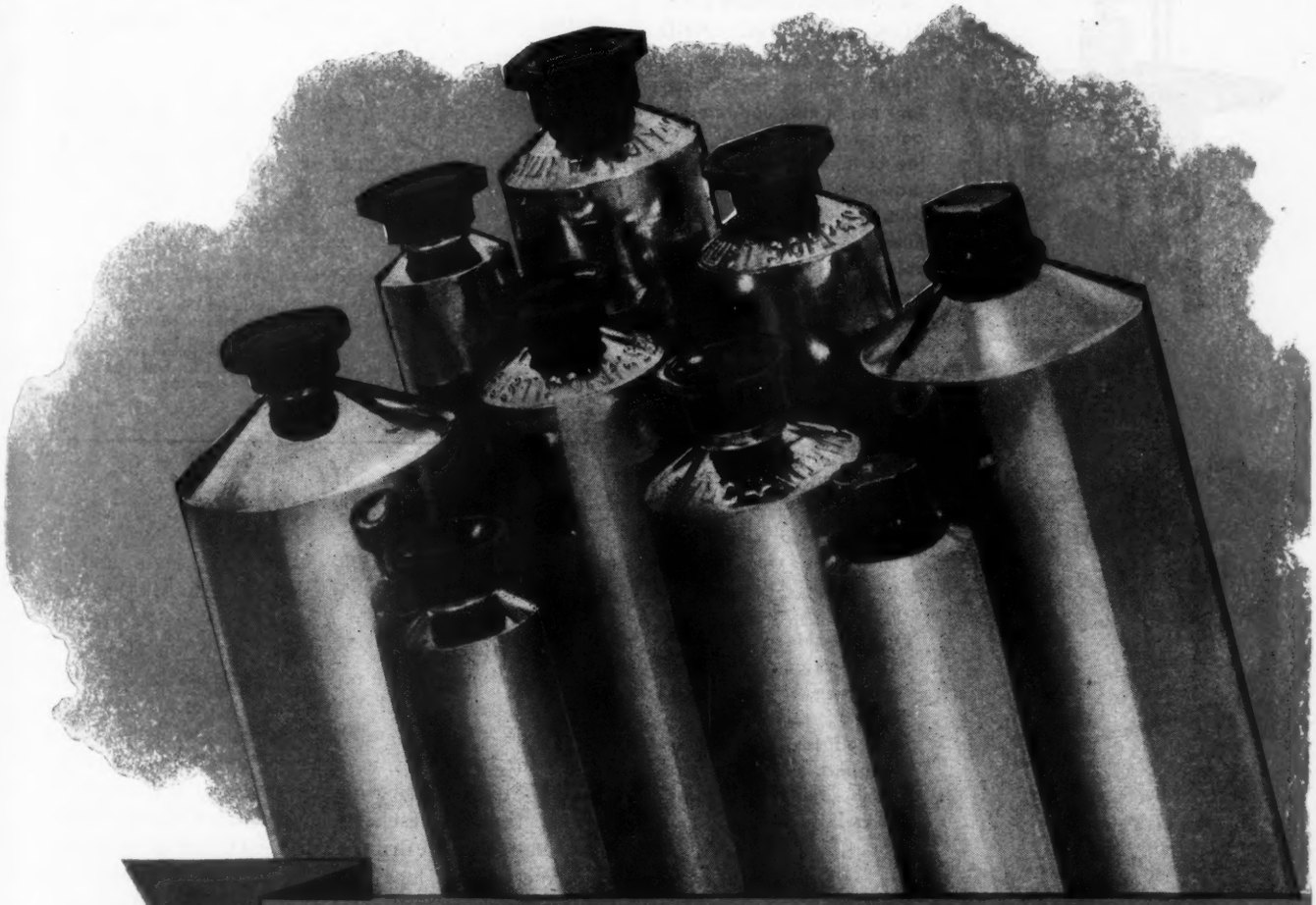

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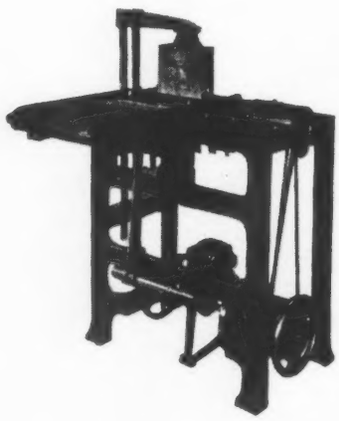
A SURE WAY To Save On Packaging Costs

The race for civilian production has begun! During war years speed and volume were the production goals—today low cost is all important. This is particularly true in the Packaging Department.

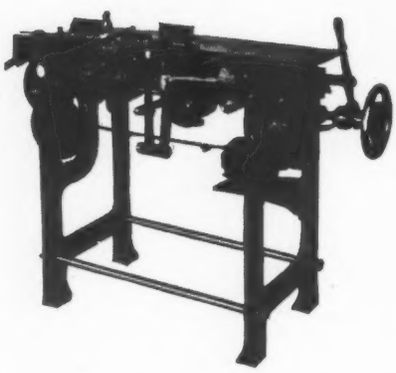
If you are setting up and closing cartons by hand, PETERS can help you reduce your cartoning cost substantially. The use of PETERS automatic and semi-automatic carton setup and closing machines will often show very substantial savings in packaging costs.

If you will send us samples of the different size cartons you are using, we will be glad to make recommendations to suit your specific requirements.

Prompt action will save delays later, as we expect to deliver these machines in the same sequence as orders are received.



This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 35–40 "Peters Style" cartons per minute and requires only one operator. After the cartons are set up they drop onto a conveyor belt where they are carried to be filled. Can be made adjustable to set up several size cartons.



This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 35–40 "Peters Style" cartons per minute and requires no operator. After being filled, the cartons enter this machine as open, filled cartons and leave machine completely closed, ready to be packed for shipment or wrapped. Can also be made adjustable to close several size cartons.

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

tions for polyvinyl acetate resins are as adhesives, although they are also used as binders and for greaseproof and decorative coatings. Polyvinyl acetate resins are particularly valued for use in the manufacture of adhesives because they adhere well to a wide variety of materials, including paper, leather, textiles, wood, ceramics, plastics and metals, because they may be applied in the form of solutions, emulsions or hot melts and because they may be used as wet-bond or heat-sealing adhesives. Polyvinyl acetate resins are useful as decorative paper coatings which can be heat-sealed at any point, and as binders for pigments, paper pulp, cork, leather-scrap, etc.

TABLE II—PHYSICAL PROPERTIES OF POLYVINYL ACETATE*

Properties	*Grades*			
	Solution Low-Viscosity 50% by weight in methanol[1]	*Solid low-viscosity beads*	*Solid medium-viscosity beads*	*Solid high-viscosity beads*
Viscosity[2]	4–6	15–20	80–115	650–1000
Color	Glass clear	Glass clear	Glass clear	Glass clear
Density, 20° C., g./cc.	1.190 ±0.001	1.190 ±0.001	1.190 ±0.001	1.190 ±0.001
Specific volume, cu. in./lb.	23.20 ±0.03	23.20 ±0.03	23.20 ±0.03	23.20 ±0.03
Melting range, ° C.[3]	95–105	120–130	180–200	[4]
Heat - sealing temperature, °C. (film to film)	70–80	90–95	95–100	120–125
Thermal coefficient of linear expansion, 30–70° C.	23–30 10^{-5}	23–30 10^{-5}	23–30 10^{-5}	23–30 10^{-5}
Burning rate	Slow	Slow	Slow	Slow

* Du Pont's Elvacet.
[1] Values reported refer to properties of the solid polyvinyl acetate contained in the methanol solution.
[2] Centipoises of a molar solution in benzene at 20° C. (86 g. solid polyvinyl acetate per 1000 cc. benzene solution) measured with Hoeppler Viscosimeter.
[3] The temperature at which a 1/2-in. cube of the polyvinyl acetate, cast on the end of an L-shaped wire hook and suspended 1 in. below the surface of a heated mercury bath, rises to the surface of the mercury.
[4] Decomposes above 250° C. before melting.

Glass and plastics . . .

(*Continued from page 125*) that both glass and plastic bottles were used over and over again in all the tests. It should also be pointed out that the glass bottles were tested in a container which the carriers would not accept for rail shipment; however, the tests of plastic and glass were made with identical containers in order to permit more definite comparison. The preliminary test run, performed merely for experimental purposes, made use of a container the construction of which would be unquestioned by the carriers; but that experimental test also demonstrated that for bottles of these small sizes, the drum would need to run an unpredictably and unnecessarily long time before any breakage resulted. The lighter weight containers, therefore, were judged adequate for the purposes in view. In all cases where possible five tests were run in a 7-ft. hexagonal drum. If no breakage occurred after 150 falls the test was discontinued. In the case of the plastic bottles, when breakage occurred the tests were likewise

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The New Packaging "Wonder-Worker" for ALL *Products*

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JEWELRY	GASKETS	BOLTS
COMBS	GLOVES	GEARS
SILVERWARE	FOOTWEAR	HARDWARE
COMPASSES	VEGETABLES	ELECTRONICS
BEARINGS	BRUSHES	CANDY
	SPRAY GUNS	DRESS ACCESSORIES
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	MICROMETERS	FRUITS
	RADIO PARTS	APPLIANCES

"ALL-SIZE" tubing, 1000 foot reels, available in 2" to 20" widths.

Can be cut to any length.
Sealing equipment available.

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Two Ways to Solve Your Production Tag Problem

You are probably *thinking* about those work-flow problems that will hit you now that peace has come. Whether you plan to resume the manufacture of a prewar product solely, or add new lines, you know you want your new factory operations to be systematized from start to finish.

That's where Dennison comes in. A properly designed tag or label as an integral part of your system can do a lot to banish worries of raw materials control, production routing and scheduling, inspection, payroll data tabulation or shipping records. So even though you're still in the blueprint stage, put your problems up to

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PAPER-PRODUCTS FOR MORE THAN A CENTURY

We'll be glad to help you develop now the special production tags or labels or product marking devices you may need. If you'd like to plan today in preparation for tomorrow, write Dennison, 227 Ford Ave., Framingham, Mass.

TAGS • LABELS • SEALS • SET-UP BOXES • MARKING SYSTEMS • PAPER SPECIALTIES

discontinued because of lack of samples. The results were as follows:

Test Run	*No. of Falls to Breakage*	*Result of Test*
Acetate (Large Plastic Bottle)		
1st	150	No breakages
2nd	150	No breakages
3rd	150	No breakages
4th	150	No breakages
5th	150	No breakages
Butyrate (Large Plastic Bottle)		
1st	150	No breakages
2nd	51	One corner bottle broken
3rd	150	No breakages
4th	150	No breakages
5th	150	No breakages
Polystyrene (Small Plastic Bottle)		
1st	87	Two diagonally opposite corner bottles broken
2nd	49	One corner bottle broken
3rd	104	Two diagonally opposite corner bottles broken
4th	36	One next-to-corner bottle broken
5th	58	One corner bottle broken
	Average 67	
Glass Bottle (Large)		
1st	53	One corner bottle broken
2nd	46	One corner bottle broken
3rd	40	One corner bottle broken
4th	44	One corner bottle broken
5th	45	One corner bottle broken
	Average 46	
Glass Bottle (Small)		
1st	143	One corner bottle broken
2nd	46	One next to corner bottle broken
3rd	63	One next to corner bottle broken
4th	31	One corner bottle broken
5th	64	One next to corner bottle broken
	Average 69	

Credits: *Plastic bottles, The Plax Corp., Hartford, Conn.; containers, Grand-City Container Corp., New York, and Robert Gair Co., Inc., New York; testing operations, Container Testing Laboratories, Inc., New York.*

Canned fire power . . .

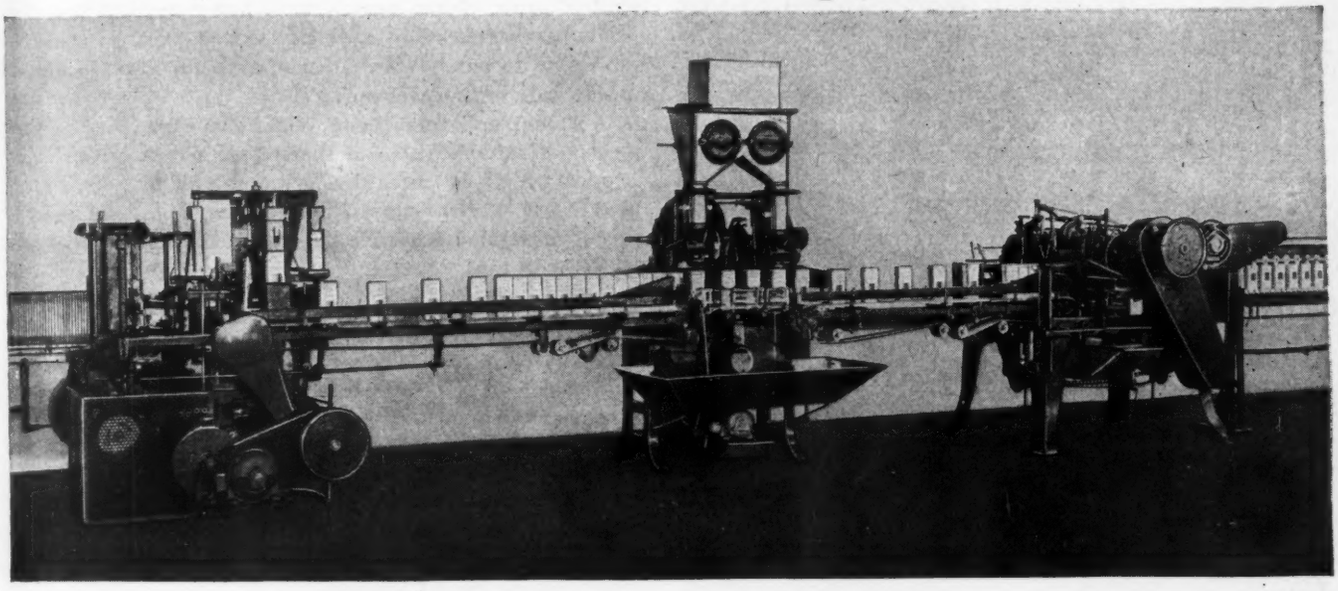
(***Continued from page 111***) to the gun are painted a bright yellow for quick identification and removal when the barrier is removed.

When the access door of a completed balanced pressure barrier is closed, the enclosed space is at a relative humidity approximately corresponding to that of the factor space. Thus, depending upon conditions, this could be high or low. The inner walls of the barrier and the surfaces of the enclosed gun contain absorbed moisture. To remove moisture from

"PNEUMATIC"

the name that means Lower Cost Per Container

PACKAGING EQUIPMENT



CARTON FEEDER—BOTTOM SEALER TWO SCALE WEIGHER TOP SEALER

HERE is a Pneumatic four-machine hook-up that's a winner every time when it comes to packaging common everyday household items in printed seal-end cartons.

Ruggedly constructed and noted for their operating efficiency these Pneumatic machines (Carton Feeder, Bottom Sealer, Two Scale Weigher and Top Sealer) are in daily use throughout the country handling numerous products such as: peas, beans, rice, sugar, naphtha flakes, spices, salt, water softener, soap powder, cornstarch, macaroni, flour, gloss starch, cracker crumbs, washing powder, barley, tea, coffee, baking powder, etc.

The packaging installation pictured above is rated at 25 to 35 packages per minute. Being readily adjustable, it is entirely practical to run a variety of products and a range of carton sizes on these fully automatic machines.

Important to you, as users will verify, is the fact that all these features add up to *Lower Cost Per Container*. You'll find it pays to consult Pneumatic whenever you have a packaging problem. Expert advice from our staff of experienced and qualified engineers is yours for the asking. Pneumatic Scale Corporation, Ltd., 82 Newport Ave., North Quincy 71, Mass. San Francisco, New York, Chicago, Los Angeles

★ ★ ★

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PNEUMATIC
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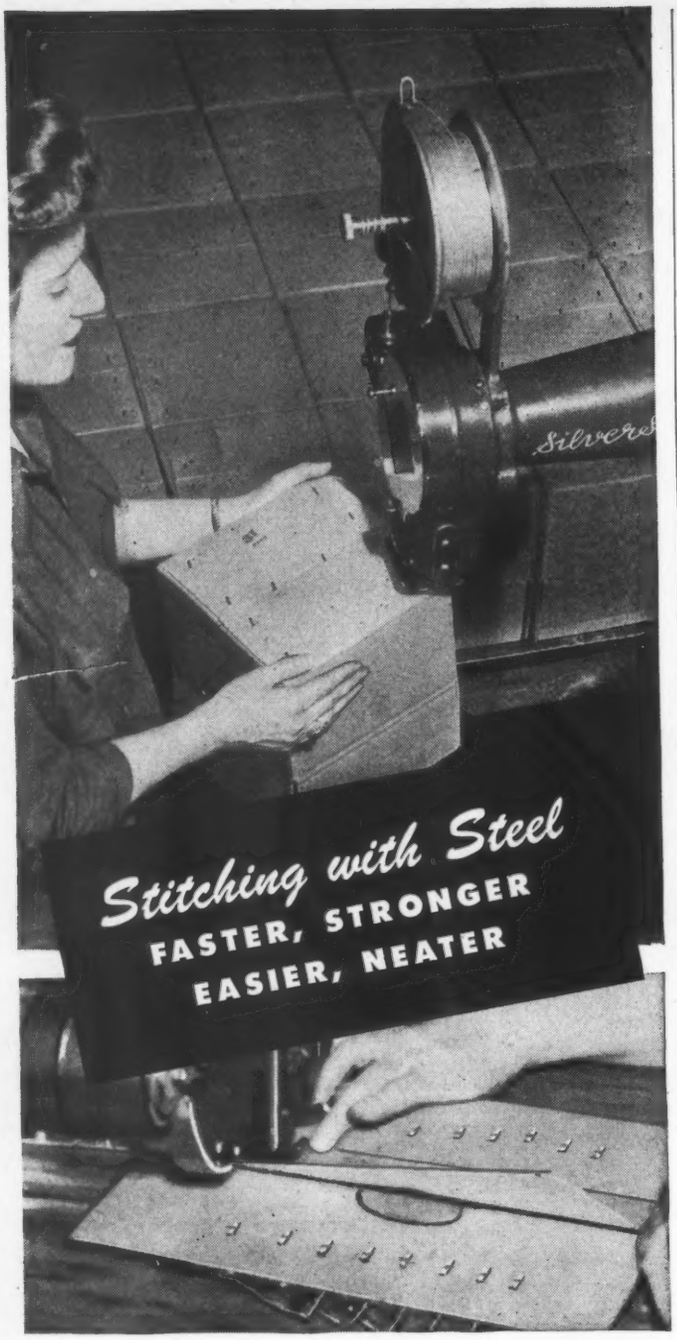

Stapling counter cards . . . tacking cloth to wood . . . stitching seams of leather gloves . . . these are only a few of many Acme Silverstitcher jobs which are done as easily, economically and speedily as stitching all types of boxboard containers.

Silverstitching is "stitching with steel". . . automatic forming and driving of steel stitches from continuous-length coils of Acme Silverstitch stapling wire . . . combining positive fastening with attractive appearance.

For facts on the economies which Silverstitching can bring to your specific closure, tacking and fastening operations, write us. ACME STEEL COMPANY, 2843 ARCHER AVENUE, CHICAGO 8, ILLINOIS.

SilverStitch SilverStitchers

ALSO MANUFACTURERS OF ACME STEELSTRAP AND STRAP APPLYING EQUIPMENT

both of these sources, special metal containers called "Desicans," holding 5 lbs. of silica gel (Fig. 7), are installed.

Barriers may be removed quickly by cutting (with axe or hatchet) the side walls, as indicated by instructions painted on them. A panel for quick entry to unfasten bolted connections inside also is indicated. All barrier-attaching bolts are of the same size, requiring only one size wrench to be stored within. Although buoyancy was not considered in the design, it has been acquired due to the leakproof construction and the volume of the barrier. Seven hundred cubic feet volume with a total weight of approximately 21,000 lbs. gives a tactical advantage which might prove useful for unloading on small islands with no docking facilities.

Steel "cans" of the Quonset type

Steel containers, sealed hermetically by welding, also have been found to meet many of the design considerations previously stated. When steel is used, however, air within the container is replaced by an inert gas and silica gel, which is necessary to remove the residual moisture on the gun and inside walls of the steel can.

A 90-mm. anti-aircraft gun weighs about ten tons. A steel "can" of suitable size and shape that can be welded hermetically tight has been designed and built for this weapon and for the 40-mm. gun. The container (Fig. 1) is approximately 20 ft. long, 8 ft. wide and 10 ft. high, weighing approximately five tons.

Sprayed resin barriers

This type of barrier is not designed for long-term storage but for periods of a few years. It may be applied in the field. Weapons can thus be given a certain measure of temporary protection until such time as it is desired to protect them permanently.

The plastic resin is sprayed around the field piece and the silica gel in cloth bags acts as the desiccant.

Steel can for small Ordnance

The low cost, high strength, ease of working and welding of steel appealed to design engineers who first worked on the development of barriers for long-time storage of small ordnance matériel. Army and commercial-sized shipping drums provided an immediate available supply of containers with which to experiment. The containers are required to pass rigid tests. They must withstand rough handling, provide mechanical protection to the contents of the enclosure, protect against rain and water. But above all, they must maintain a continuous moistureproof barrier under temperature and humidity changes.

This latter precautionary measure was deemed particularly necessary because of the probability that matériel so packaged would in time be stored in such diverse climates as the damp, bleak Aleutians and the hot, humid isles of the South Pacific. A moistureproof barrier was found that would meet these requirements. This was the hermetically sealed drum with silica gel as the desiccant to take up all the entrapped moisture, keeping the relative humidity within the container below the corrosion-safe level of 30%.

Steel containers may be made in many shapes and sizes (Fig. 4). The steel drums require surface treatment to protect them from the elements. The application of a proper finish readily solves this problem. It is also possible to fabricate aluminum containers and by the proper finish practically eliminate any possibility of having to consume time and money by painting.

THE IDEA CAME FIRST

An Idea must exist in the mind of its Creator before it can come to life and assume physical shape and significance . . .

as in

SPECIALIZED PACKAGING
CREATIVE FOLDING CARTONS
INTRIGUING SET-UP BOXES
UNUSUAL MERCHANDISE COUNTER DISPLAYS
ROUND BOXES

ACME PAPER BOX COMPANY
STATE AT SIXTIETH ST., CHICAGO 21, ILLINOIS
CREATORS • DESIGNERS • MANUFACTURERS

The Better the Product, the More Important the PACKAGE

Display and Protect Them in

LUSTEROID *Vials and Tubes*

When planning your post-war packaging, keep this suggestion in mind:

1. LUSTEROID displays your product through its crystal-clear walls for eye and buy appeal.
2. LUSTEROID's strength and rigidity protect your product from harm in shipment, at point of sale and in use.

But that's only part of the LUSTEROID story! This light-weight plastic saves time, work and money. Its inherent strength eliminates the need for protective packing in shipment. Its "printability" means no labels to affix. Its colors—clear or opaque—give you all hues of the rainbow to work with. Sizes from ¼" to 1¼" in diameter. Lengths up to 6". Cork, slip-on or screw-cap closures.

Write for post-war details now.

LUSTEROID CONTAINER CO., INC.

Formerly Lusteroid Division of Sillcocks-Miller Company

Office and Factory

10 W. PARKER AVENUE, MAPLEWOOD, N. J.
MAILING ADDRESS: SOUTH ORANGE, N. J.

Measuring permeability . . .

(*Continued from page 159*) saturated air. Each value presented is the average of two measurements on each of four different samples. Columns 4 and 5 present derived values calculated from these observations. Column 4, for example, gives the hypothetical permeability of the moisture-containing material to carbon dioxide at a partial pressure of 735 mm. While the observations are presented in most cases with three significant figures, it is not suggested that the results are reproducible with that degree of precision. Variations of 5 to 20% between check tests are not uncommon.

The calculated values of permeability at different pressures or partial pressures of carbon dioxide are based upon the assumption that the permeability is proportional to the pressure (or concentration) of the carbon dioxide (1). With many materials, this linear relation also holds for moisture vapor at concentrations below about 80% relative humidity (3). However, from 80 to 100% relative humidity, the permeability to water vapor increases at a faster rate than at lower humidities. In comparing the data of Table I, the fact should also be kept in mind that the thickness of film is an important factor in determining the rate of gas transmission. The permeabilities of the films of homogeneous plastic materials are inversely proportional to their thickness. For example, a film of 0.003-in. thickness will have a permeability about one-third that of a film of the same material but only 0.001 in. in thickness.

The values of column 5 show that at the same partial pressure (25 mm.), water vapor penetrates four of these materials at a rate from 8 to 77 times that of carbon dioxide. In the case of moistureproofed cellophane, the observed permeability of carbon dioxide was zero within the limits of measurement, so that this ratio cannot be calculated.

The aluminum foil of 1 mil thickness was impermeable to carbon dioxide and water vapor. This result was expected, since aluminum foil in a thickness of 0.001 in. is relatively free from pinholes. With thinner gauges of foil, where the presence of pinholes permits some gas diffusion, it is customary to laminate the foil with a plastic film of some kind when low permeability is an essential characteristic.

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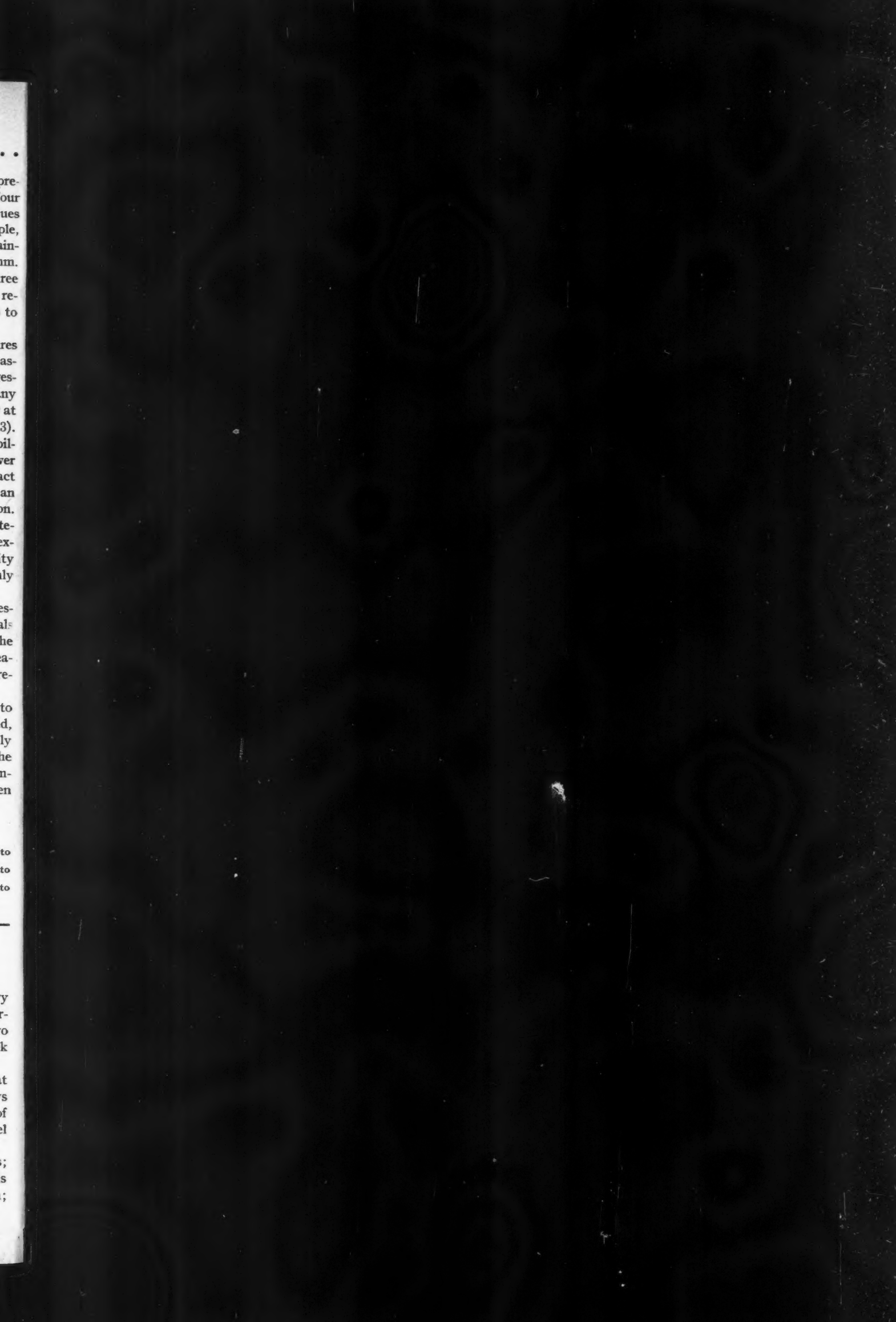
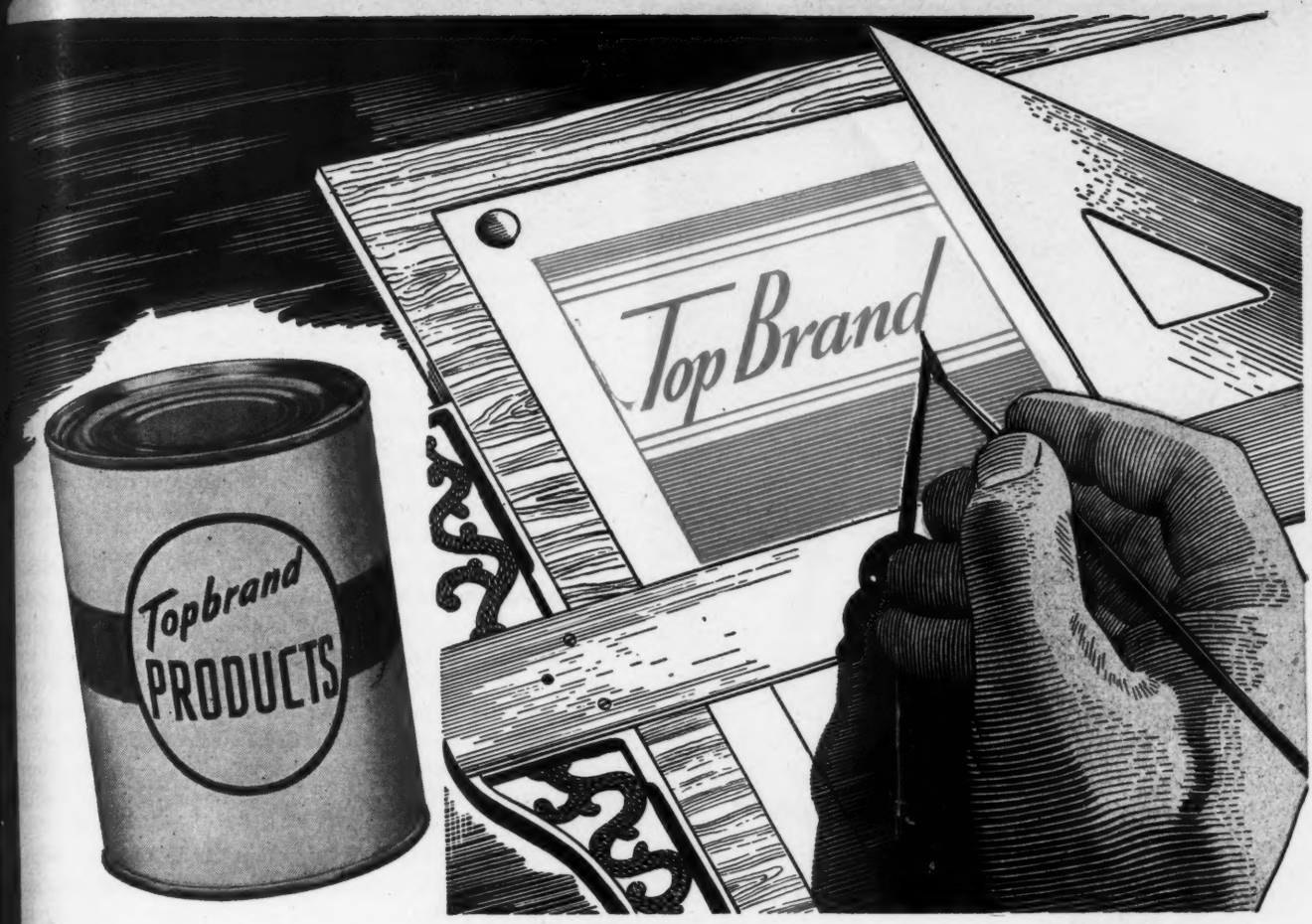
Taps and dies . . .

(*Continued from page 103*) information that did not vary for all the different packages. Why not transfer it to the carton and leave more room on the label? Accordingly, the two side panels contain company name and address, and the back panel carries the legend "Made in U.S.A."

For the second group, the color of the carton would be at least a partial guide; but, since the information was always the same for taps packaged in a particular color, the type of merchandise and precision group was printed on the front panel at the time the carton was produced.

Size, class, catalog number and quantity are all variables; several little blank panels were therefore provided on this front face of the carton, each for a definite bit of information;





How a Piece of STEEL and a Little TIN Make Your BRAND NAME Stand Out!

● Attention! That's what your products get when they are packaged in steel-and-tin cans with colorful, lithographed designs. As indestructible as the steel-and-tin container itself, your brand name lithographed right on the can *registers* for repeat sales.

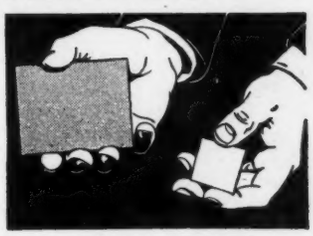
Eye-appeal also registers with retailers . . . tempts them to display products packed in cans. Cans are trouble-free, sturdy —more than 98% steel, less than 2% tin. In these shatterproof steel-and-tin containers, your products are protected against careless handling . . . can be used effectively in any form of sales-building display.

Above all, products packed in cans are positively protected from the harmful effects of light, air and moisture. So plan *now* to send your products to market packed in steel-and-tin *cans.*

THEY'RE TALKING . . . ABOUT CANS

From coast to coast . . . full-page, full-color ads . . . are telling the story of the many advantages of buying products packed in *cans.* Nine national magazines and the nationally circulated magazine sections of Sunday newspapers are arousing the interest of over 43,000,000 readers in the increasingly important role of cans in everyday living.

CAN MANUFACTURERS INSTITUTE, INC., NEW YORK



It's more than 98% steel, less than 2% tin

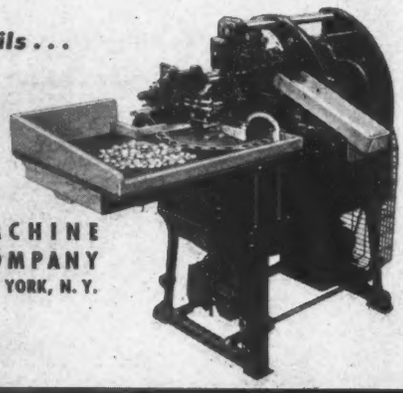
Pointers on Packaging Your Products in Cans

1. Cans protect against air, light and moisture.
2. Don't break, split or tear.
3. Are economical to pack, ship and store.
4. Stay neat and clean
5. Lithograph-labeled cans display effectively and safely.

NO OTHER CONTAINER PROTECTS LIKE THE CAN

The Rose IST is highly versatile because of the wide variety of hard candies and soft center pieces it will handle. It is adjustable to a wide range of shapes and sizes. Cellophane, foil, or wax can be used — with or without an inner liner. Twist wrapped pieces are attractive. They make a good mass display. The Rose IST turns them out on a high speed basis.

Write for details . . .



AMERICAN MACHINE & FOUNDRY COMPANY
511 FIFTH AVENUE • NEW YORK, N. Y.

AMF

ROSE CANDY MACHINERY

so that cartons of the various types of merchandise would all be uniform in the respect that corresponding information appears in its proper place on each of them. With a line so extensive and diversified, thousands of labels are required and one may differ from the next one only in a single word or figure. This marking problem was solved by the adoption of a machine which permits of rapid changes in variable type material, with the result that all the boxes bear imprints that are uniform in style and appearance. Hand stamping with rubber stamps, formerly used, has been eliminated, resulting not only in improved appearance but also in reduced cost, since rubber stamping was one of the most costly operations in their packaging set-up.

One incidental change made was to drop the "1 doz." designation and substitute the numerical equivalent; and the panel was made large enough so that a dealer who sold a tap or a stock clerk who delivered one on requisition in a shop could cross out the old figure and put in the correct new figure for purposes of inventory and stock control.

For some of the smaller sizes taps, a folding box with a cellulose acetate window was adopted. This contains a wooden tray which is an adaptation of one used formerly in the larger packages. This package adequately fulfills the protective function, preventing damage in transit or from contact with other metallic objects. It has further advantages: it is convenient to remove or replace the contents if necessary, it permits a count without opening the package and it affords identification for the benefit of users who may not be familiar with tap terminology.

Those in charge of the development of this program kept a careful eye on cost considerations, making detailed comparisons of the old with the proposed new packages, studying and evaluating the various materials available as well as the effects of design or method changes. Their actual figures of course are confidential, but the fact that the new program was adopted is equivalent to an economic vindication of improved packaging procedure.

CREDITS: *Folding boxes by Brooks Bank Note Co., Springfield, Mass. Metal edge boxes by National Metal Edge Box Co., Philadelphia, Pa. Marking machine by Markem Machine Co. Keene, N. H. Cellulose acetate by Celanese Plastics Corp,, N. Y. C.*

Dehydrated foods . . .

(Continued from page 164) it is estimated that the double coat of plasticized gelatin (excluding the weight of the underwrap and the overwarp) added 16 to 18% to the weight of the block.[3] In the case of the 1-lb. pack the double coat of gelatin added only 8.5% to the net weight of the meat.

As regards cost, the cost of packaging materials per net ton of dried meat, inclusive of wrapping paper and cartons, amounted to about $220 (of which $164 was accounted for by the plasticized gelatin) in the case of the 2-oz. blocks and about $132 in the case of 1-lb. packs. The following were the prevailing rates for the materials used:

Waxed paper, at 31 cents per lb.

Gelatin, at 70 cents per lb.

Glycerol, at $4.40 per qtr.

It would be purposeless here to summarize the labor costs for the trial since in extensive commercial operation costs would be entirely dependent to the extent to which the pro-

[3] The gelatin may have been unnecessarily thick. Trials on a smaller scale in the laboratory gave successful results with a thickness of gelatin amounting to only 10% of the weight of the block.

same with Betner Service

To put it another way, Betner service is complete, "from idea to finished bag." Not just bag-making, though we make them by the billion every year. But ideas, designs, art suggestions, packaging advice — Betner's complete service includes them all.

As the picture above so subtly hints, every packaging angle covered. And it's a service you can employ *all or part.*

Famous brands galore go to market under the protection of Betner Bags. Frozen foods, powdered and dehydrated foods, coffee, cereals, flour mixes, many others — they're all "Betner-bagged" for easy filling and sealing, for insurance against leakage, seepage, loss of bulk or flavor.

We've helped a lot of processors with their packaging perplexities; perhaps we can do as much for you. Remember, Betner service is at your service, all or part. Ask us more about it; you won't be obligated in any way.

Benj C Betner Co

DEVON, PA.

Benj C Betner Co of California, Los Angeles, Cal.

Get Your Bottles
OFF TO A GOOD START

with ERMOLD Labelers

TEN IN A ROW! And headed for bigger sales because they are precision labeled with an Ermold Automatic Labeler.

Steady feeds keep bottle and jar breakage down, and volume output from 4-, 6-, 8-, or 10-bottle models maintains high production without expensive machine jams.

Body and neck labels and foils stay on longer, look better, when applied by Ermold Labelers because the sealing action is positive. No more headaches from slipping or wrinkling. Dating or coding, too, is fully automatic and costs you no more.

Ermold Automatic Labelers have recently been re-designed to give you even longer wear and better service.

Whatever your packaging requirements may be—steady volume production, frequent change-overs, varied container size and style—a versatile Ermold Labeler can show the way to greater sales appeal and bigger profits.

Write for information today. Edward Ermold Company, 652 Hudson Street, New York 14, N. Y.

Branches: *Statler Bldg., Boston 16, Mass.; 549 West Randolph Street, Chicago 6, Ill.; 822 Leader Bldg., Cleveland 14, Ohio; 816 South Taylor Ave., St. Louis 10, Mo.; 420 Market St., San Francisco 11, Calif.*

EDWARD Ermold COMPANY

Over 64 years of labeling leadership

duction line would be mechanized. In this respect, however, the inference drawn from the trial was that the cost of the process for small units such as 2-oz. blocks would be prohibitive unless the circumstances were such that cost was a secondary consideration. On the other hand, it was considered that the cost of packaging by this method in 1-lb. packs compared reasonably well with the cost of packaging in airtight metallic containers. The weight of the packing material in the case of the 1-lb. package is also much the same as that of a similar number of blocks packed in tinplate. It may also be mentioned that tests have shown that the 1-lb. pack can be nitrogen-packed or vacuum-packed without difficulty, giving the same proportion (98%) of perfectly sealed units.

The gelatin coating has to be protected from gross uptake of water during transport and storage. Wrapping the small unit in a moisture-resistant heat-sealed wrapper gives a considerable degree of protection against atmospheric humidity, but for further protection the ultimate master container would need to be both moisture and waterproofed, e.g., with bitumen or sisalkraft.

Acknowledgments

Acknowledgments are due to Foster Clark Ltd., Maidstone, for assistance rendered during this trial and to Robinson Waxed Paper Co., Ltd., Bristol, for supplying the special paper used. The photographs are reproduced by the courtesy of the Ministry of Food (Great Britain).

The work was carried out as part of the program of the Food Investigation Board of the Department of Scientific and Industrial Research (Great Britain). It is published by permission of the department.

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Questions and answers

(Continued from page 166) the exterior surface will become very unattractive.

In general, because of the fact that both butter and lard are stored at temperatures below their melting point—in other words, they are solid fats all during the storage and use period—the greaseproof requirements of the board can usually be met with surface treatments or a lamination which does not represent the maximum obtainable greaseproofness.

To improve such boards so that score lines and folds shall be completely greaseproof requires the use of more expensive plies and laminations or coatings, both of these result in appreciable increases in cost, which hardly seem warranted.

The ink bases for normal printing uses are softened or dissolved in many fats and oils; therefore, an entirely different type of inks formulation is necessary. Certain synthetic resins, cellulose derivatives and some of the proteins have been formulated into inks which are entirely resistant to the softening action of lard or butter. Not only must the ink base be resistant to the greases involved, but the anchorage of these inks to the paper must be of such a nature that it is not affected by grease penetration into the paper fibres.

You should contact various ink companies and present your problem to them and you will be offered a variety of formulations which, in general, will meet your performance requirements, and can be adopted for your particular conditions.

PACKED WITH POSSIBILITIES...

...for fresh perishables ***...for processed products*** ***...for fast-frozen foods***

Check over the factors that can rob your product of its saleable qualities . . . and see how properties of Keller-Dorian papers provide an effective barrier against them.

These new-type packaging papers come in two structures: one with an aluminum foil lamination; the other with a plastic coating. Both are rugged and permanent. They'll take temperatures as low as 50° below zero without brittling and cracking; 190° above without peeling or softening.

Perfectly pliable, each can be scored, cut and fabricated into any size or shape of attractive package. With heat sealing you get an airtight container that will retard spoilage, eliminate contamination, keep extraneous odors out, and stop excessive moisture-vapor loss.

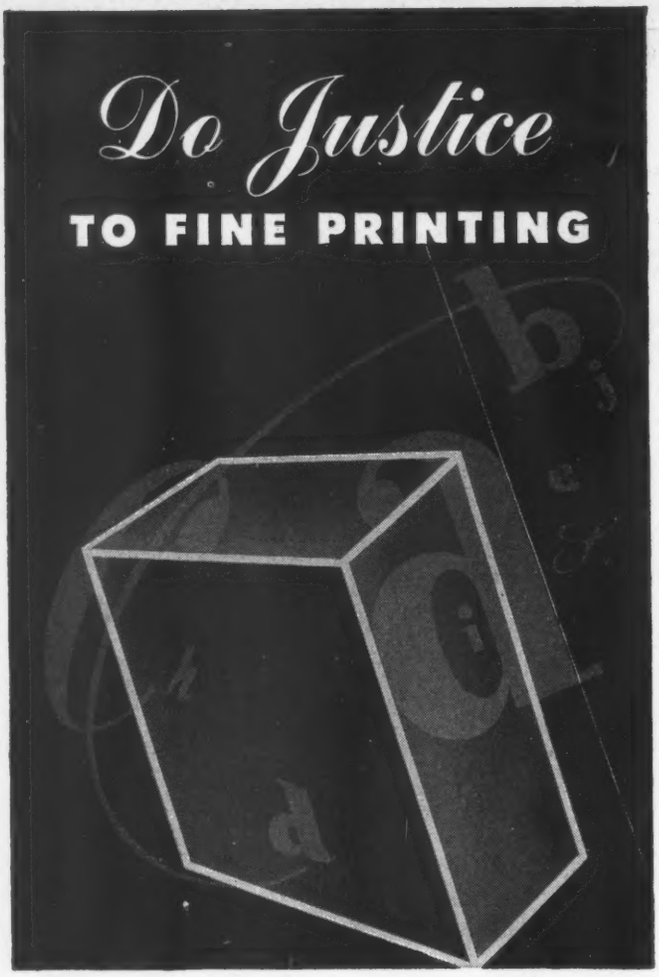
And as for your packaging costs, here's a valuable point to remember: A *single* wrapper of Keller-Dorian paper can do the job up right . . . reducing amount of paper required . . . avoiding duplication of effort. Send for free testing samples and data.

Outstanding Features:

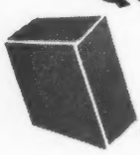
- ★ ***MOISTUREPROOF***
- ★ ***VAPORPROOF***
- ★ ***GREASEPROOF***
- ★ ***NON-TOXIC***
- ★ ***HEAT-SEALING***

KELLER-DORIAN
CORPORATION
Empire State Building
New York 1, N.Y.

FUNCTIONAL PACKAGING PAPERS *for Protecting Perishable Products*



Put it on
MAC SIM BAR
Quality Boxboard



Insure a finished carton that will be worthy of your selection of design, artwork, plates and printing — specify Mac Sim Bar quality box board.

PAPER PACKS A WAR PUNCH!

MAC SIM BAR Paper Company

OTSEGO, MICHIGAN PHONE KALAMAZOO 5500
CHICAGO, 228 N. LaSALLE PHONE CENTRAL 1798

Vibration . . .

(*Continued from page 130*) will settle to a considerable extent in vibration, it is usually advisable to have two filling stations. The package is rough filled at the first station, then vibrated and finally given a finish fill to the exact weight or quantity at the second station. Modern mechanized lines accomplish this very quickly for such products as cake mixes and similar powdered materials.

For products which are molded for shipment, the application of vibration to the mold greatly improves the consistency of the material and uniformity of weight. This applies to both molding machines using pressure and such products as chocolate bars, which are simply poured into the molds. In molds that are filled by pouring, the vibration assures the filling out of even the most remote corners and recesses of the molds.

An unusual method of packaging is shown in Fig. 5. This is a combination of filling and settling at the same time; it is not filling by weight. The vibratory packer for settling packages is used. On this is placed a container having retaining strips for vials or bottles to be filled. Then the box is filled with a powder and the vibratory packer started. This settles the material into the vials, thoroughly compacted, so that no additional settlement is noted after shipment. This is a very simple method which might seem rather slow and crude; however, when it is considered that two dozen and possibly four dozen containers are being filled at one time, the speed is quite good. With certain kinds of materials, this is a very practical method of filling.

Fig. 6 shows a typical vibratory packer which can be used as indicated, the container being placed manually on the packer. The vibrator also can be placed under a belt or drag conveyor over which the container is passed and the slack taken up with a second filling. If passing over one vibrator does not give sufficient settling, several of these can be mounted in tandem. For settling chocolate or similar material in molds, a tandem arrangement is generally found to be necessary.

Many packaging machinery manufacturers are now standardizing on the use of controlled electric vibration for either one or all of the applications described. Low maintenance cost, lack of lubrication and noiseless operation, plus the almost instantaneous response to sequence control, are points in favor of the vibratory principle for packaging. The large hopper vibrators are an impact type and do create some noise. The latter types, however, are generally used on extremely large bins and hoppers in the manufacturing processes and it is a rare case in which packaging equipment requires the benefit of their power.

CREDIT: *Vibratory devices manufactured by the Syntron Co. Homer City, Pa.*

The Reader Service Department of MODERN PACKAGING maintains the world's most complete library of information on packaging problems. In the latest three month period, Reader Service answered 210 mail inquiries and gave help to 294 who called in person or telephoned. Can we help YOU?

There are no Alvey Conveyors on Saturn—
BUT YOU'LL SEE THEM EVERYPLACE ELSE YOU LOOK!
ALVEY
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EECHNUT
OLGATE
ELIZABETH ARDEN
AMERICAN HOME
PRODUCTS
THOM McAN
SHOES
LEVER BROS.
WRIGLEY
LADY ESTHER
WHITMAN'S
CHOCOLATES
BAKER'S COCONUT
YARDLEY
OWENS-ILLINOIS
GLASS CO.
4 ROSES
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RALSTON
PURINA
BEST FOODS
CARNATION
HAZEL-ATLAS
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HOUSE
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Conveyors
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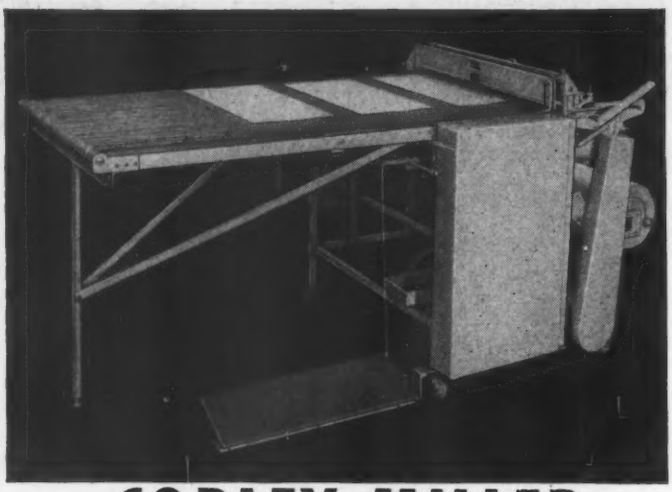

CORLEY-MILLER SHEETER-GLUER

☆

Cuts, Glues, and Conveys Sheets or Bands to Wrapping Crew

THE Corley-Miller "Sheeter-Gluer" glues, cuts, and conveys bands or sheets to the fingertips of one or more operators. Machine can be equipped with foot lever for individual sheets or *variable speed drive* can be furnished to automatically control the number of sheets delivered per minute.

In addition to wide use for sheeting, banding, wrapping, bundling, and window forming, the "Sheeter-Gluer" can also be furnished with attachments for: (A) Pre-sealing printed labels or bands to the cut sheets. (B) Cutting two or more small rolls simultaneously. (C) Making reinforced sheets by heat or glue sealing one sheet over another. (D) Combination slitting, cutting, and stacking. (E) Spot-cutting printed rolls.*

* With aid of *electric eye.*

1. First operator lays undershirt diagonally on Cellophane sheet with three glued corners.

2. Second operator overlaps two corners of Cellophane sheet, completing first fold.

3. Third and fourth operators each fold one end of wrapper, completing corner to corner wrap.

★

MACHINES FOR: WRAPPING, BAGMAKING, BAG AND CARTON FILLING, BAG CRIMPING OR CLOSING, GLUING AND SHEETING

Miller *Wrapping & Sealing Machine Co.*

14 South Clinton Street, Chicago 6, Illinois

Plants and people

(*Continued from page 174*) can market. The officials are: **J. Louis Reynolds,** president; **Walter L. Rice,** vice-president; **R. S. Reynolds, Jr.,** vice-president and treasurer; **Edwin Taranger,** vice-president and general manager; **Atanasio G. Saravia,** vice-chairman; **Angel Rivera, Felix Aramburu Zavala** and **Emilio Thalman.**

Gaston F. DuBois, vice-president and member of the executive committee of Monsanto Chemical Co., has announced his retirement after 41 years with the company. He will continue to act as a director and consultant to the company. **Arnold H. Smith** has been appointed director of the foreign department of Monsanto, succeeding **Herbert M. Hodges. Marshall E. Young** will succeed Mr. Smith as assistant director. **John E. Gurvin** has been named vice-president of **Merritt Engineering and Sales Co., Inc.,** a subsidiary of Monsanto.

Donald Williams has been appointed general sales manager of the **Dow Chemical Co.** and **Donald K. Ballman** is the new assistant general sales manager.

Joseph Scheuermann has been appointed sales manager for the **Cameron Machine Co.** of Brooklyn.

C. F. Fuller has been appointed technical sales representative of the **Clarvan Corp.,** Milwaukee, after devoting the last four years to important work on war developments.

The packaging division of **E. W. Twitchell, Inc.,** is now offering the products of its mills under the trade name of **"The Milgate Line."** Items in the brand include hot-melt coating and laminated papers, boards, cellophanes, glassines, foils, acetates and cloths.

The H. D. Catty Corp. announces the removal of its office to 160 Varick St., New York 13.

Raymond W. Boeckman has been elected vice-president in charge of plant operations by the **Thatcher Mfg. Co.** board of directors.

T. R. Baxter, former director of purchases and packaging development for **Standard Brands Inc.,** has joined **Shellmar Products Co.,** in Mount Vernon, Ohio.

Arthur B. Hull, sales engineer for the New York Office of the **Package Machinery Co.,** died on September 9, at the age of 64.

For your information

(*Continued from page 176*) **Card Co.,** Holyoke, Mass., has been distributed to the trade. The remaining nine or ten which will complete the set will be forwarded as they are printed. These booklets show a wide variety of decorative box papers in an interesting range of colors. The booklets, themselves, are convenient for filing as they measure a mere 5 by 8 in. A cutout on the cover of each allows a different pattern from the one on the cover to show through making it clear that each book holds more than one design.

The Container Testing Laboratories, Inc., has published a 16-page report to the **Weatherproof Solid Fibre Box Group** showing the results of all the performance tests made on Vs-boxes for wartime use. Dramatic photographs, charts and tables illustrate the testing methods used.

The American Can Co.'s St. Louis plant is expected to start peacetime production of cans for beer, coffee, oil, spices, insecticides, antiseptics, baby foods and fruits and vegetables around the first of 1946.

What is your Packaging Problem?

MEHL BAGS will give you the proper package for your products

Whether your product is new or long established, the chances are that it needs a better or more modern package than was formerly considered satisfactory. War experience has proved that *maximum protection* under all conditions of shipping and weather is the final test of a good package.

Because of our versatility in converting foils, films, laminations and other specialty materials into both primary and secondary packaging, we can certainly assist you in developing the *best* specialty package for your product.

Write, wire or phone us about your packaging problem—or, if you prefer, ask to have a representative call on you.

MEHL MANUFACTURING COMPANY

Division of Sydney-Thomas Corp.

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Now represented in Michigan, Northern Ohio, and Northern Indiana by: L. T. SWALLOW and ASSOCIATES, Boulevard Bldg., Detroit 2, Mich.

CONVERTERS OF PROTECTIVE PAPERS • CELLOPHANE • LAMINATED FOILS • and other PAPERS and FILMS

Seamless - Shatterproof
Plastic CONTAINERS

WITH *PEACE* AT HAND, HERE ARE PLASTIC PACKAGING FEATURES YOU CANNOT OVERLOOK—

←**EYE APPEAL:** Lustrous, crystal-clear visibility permits full view of contents; keeps its contents untouched by shopping fingers . . . And where over-all labeling matter or protective coloring is required, any color or tint is available.

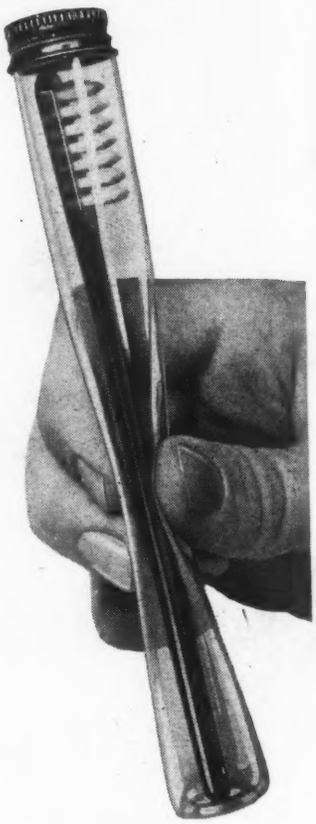
PROTECTION: Seamless, *shatterproof* protection of Clearsite containers means your package will withstand more than ordinary usage.

←**IMPRINTED LABELING:** Full space of container, or a few simple lines identifying your trade name is permanently imprinted, during manufacturing process.

RESILIENCE DEFIES BREAKAGE →

The resilience of CLEARSITE *plastic* containers "gives" under pressures which would shatter ordinary glass . . . and that resilience often serves as a dispensing means where powder or oils are packed.

FEATHERLITE: Clearsite is 80% lighter than glass—and far more durable. It affords great economies in shipping and "protective padding," too!



These important factors are features of

Clearsite*

Write for Complete Details

*Reg. U. S. Pat. Off.

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PLASTIC CONTAINERS
AND
PLASTIC PRODUCTS

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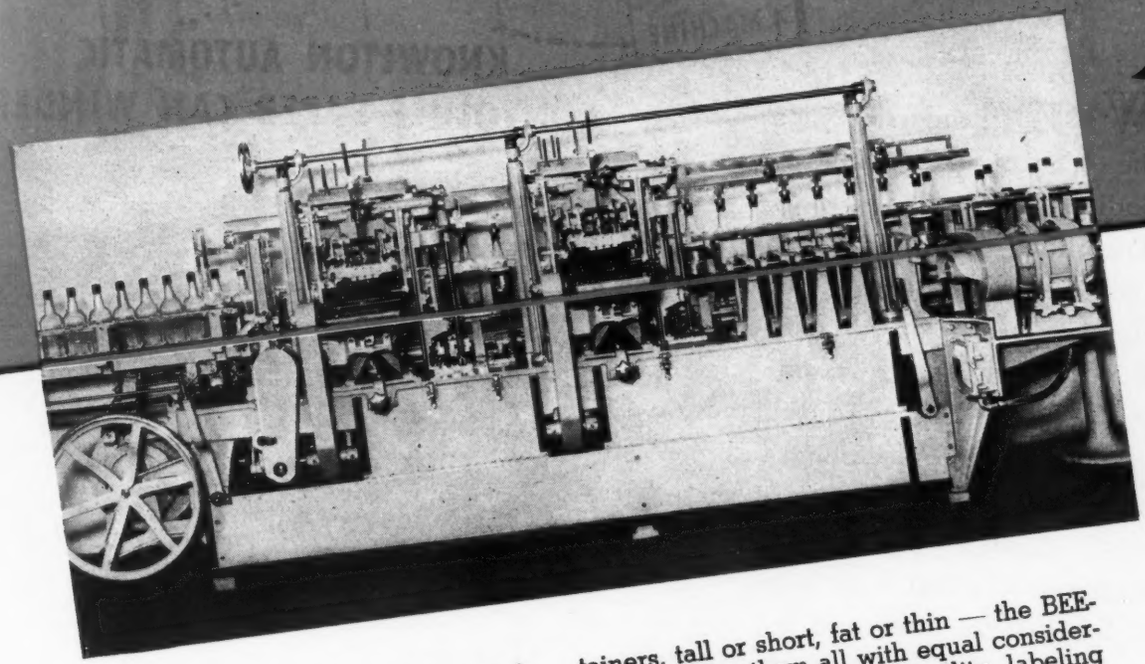
BEE-LINE

TO BETTER LABELING

WORLD LABELERS



WORLD's BEE-LINE Labeler ushers each individual container gently but firmly through the labeling process — front labels, front and back labels, neck labels, too, if desired—in a *bee-line* without traffic jams, collisions, detours or hold-ups. It's ideal for the modern light weight glass. Labeling is uniformly clean, precise, smooth and firm.

Round, square, flat, oval or panel containers, tall or short, fat or thin — the BEE-LINE handles them all with equal consideration and dispatch. For quality labeling and lots of it, year in and year out, you get the best in the WORLD BEE-LINE.

Tell us your requirements or, better yet, send us samples of your labeled containers and we'll submit production and cost estimates.

"YOU GET THE BEST LABELERS IN THE WORLD"

ECONOMIC MACHINERY COMPANY

Builders of World Automatic and Semi-Automatic Labelers for Every Purpose

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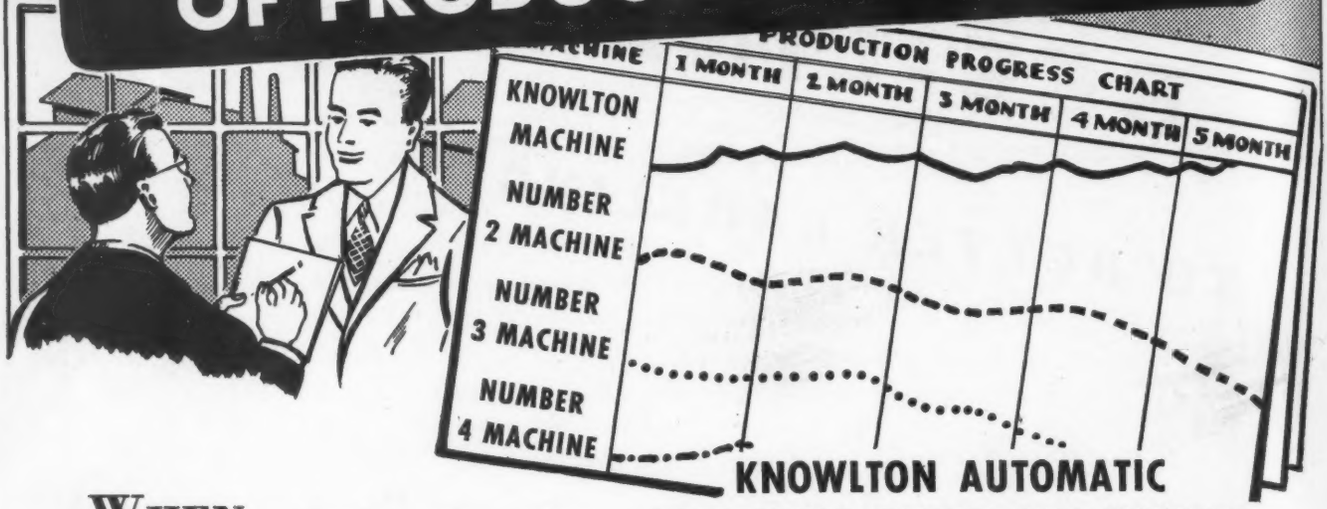
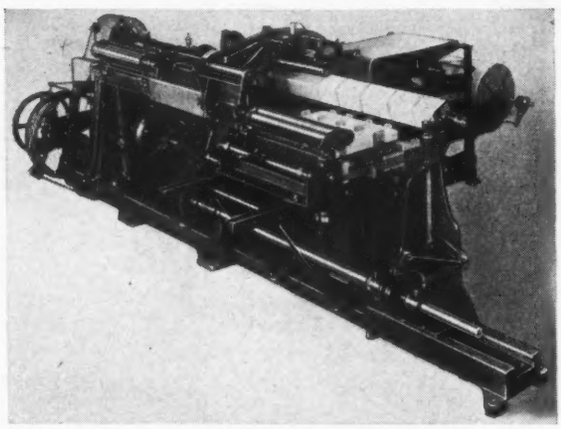
COMPARED YOUR COSTS OF PRODUCTION LATELY?



KNOWLTON AUTOMATIC CONVOLUTE PAPER CAN WINDER

WHEN production men analyze the cost of producing paper can bodies on a comparative basis Knowlton machines win first place. This is especially true of the Knowlton Automatic Convolute Paper Can Winder, one of the most versatile and adaptable paper can machines on the market. This machine is designed to produce a wide variety of shapes from $1\frac{3}{4}$" to 8" in diameter or across diagonals. In fact 1 to 5 paper can bodies can be made and labelled at one time, and shaped for either paper or metal ends.



WHERE unusual strength or high quality is desired, there is no better machine to produce low cost paper cans and tubes (2 to 21 plies) than the Knowlton Spiral Tube Winder.

KNOWLTON *Engineers*..
will gladly discuss with you your packaging production problems.

WATER, MOISTURE DAMPNESS *everywhere*

*Valley 2A

Up to press time, priorities still are required for the use of this thoroughly proven, laminated foil cloth. When it can be used for civilian goods, perhaps you will have a job for the most efficient moisture vapor packaging ever devised, as a distinguished war service record will testify.

Our technical staff will be glad to work with you now to show you how this improved material can serve your needs. We will not obligate you.

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ACME BACKING CORP.

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Modern Plastics

announces

15,000 CIRCULATION

as of October, 1945.

Modern Plastics announces a minimum circulation of 15,000 starting with the issue of October, 1945. Nearly 4,000 PAID subscribers who had purchased subscriptions which could not be fulfilled under paper restrictions, will then be added to the group of 10,553 PAID, 11,101 total*.

Modern Plastics thanks the companies and executives, some of whom waited upward of two years for their subscriptions to be filled—for their patience and loyalty; and pledges continual editorial vigilance and leadership to those new as well as all old subscribers.

The new space rates are being announced to advertisers, agencies and prospective advertisers.

* Audited by the Audit Bureau of Circulations

MODERN PLASTICS MAGAZINE

ABC MEMBER AUDIT BUREAU OF CIRCULATIONS

. . . the only ABC plastics paper . . . the field's established institution . . . one of America's great industrial publications

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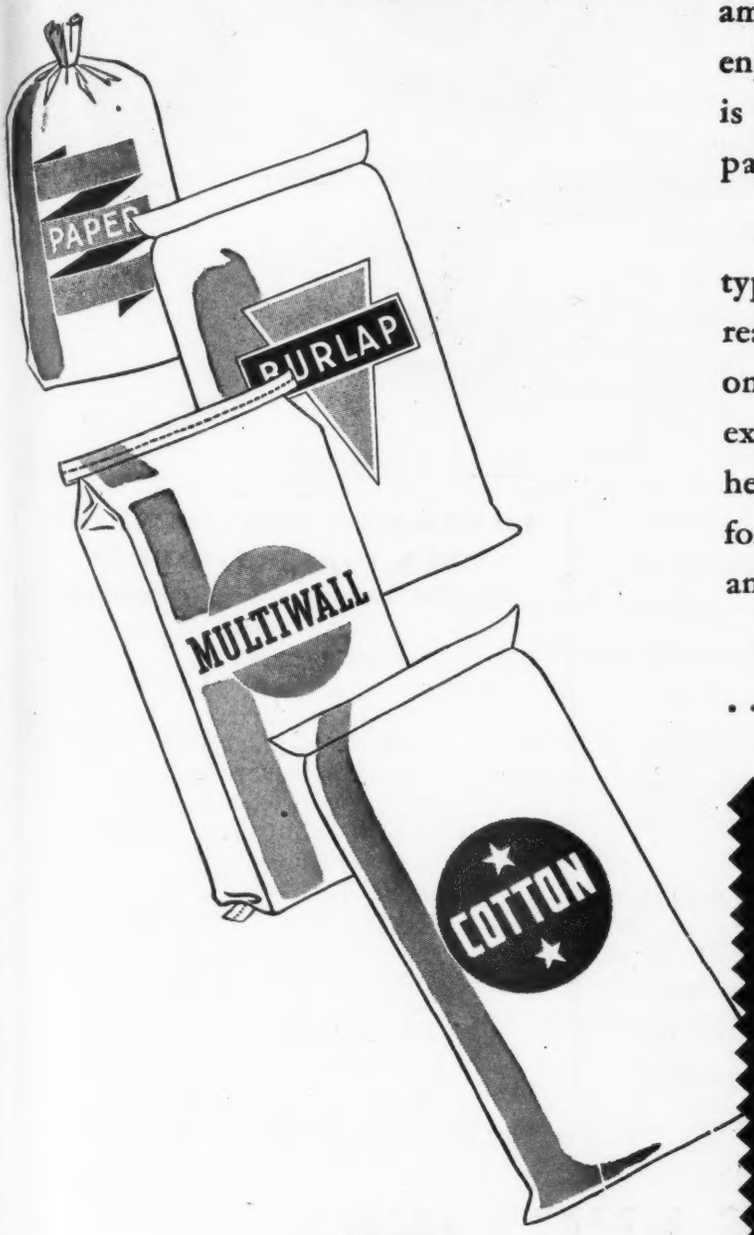
Whatever's the BEST BAG FOR YOUR USE

. . . we make it!



WHEN you buy your bags from Bemis, among the important advantages you enjoy is this: You can buy whatever type is best for your particular use—cotton, paper, multiwall, burlap or waterproof.

Bemis is a leading producer of *all* types of bags and consequently has no reason to high-pressure you toward any one type. We have no favorites. If our experienced packaging specialists can help you to determine which is the best for your use, you may be sure that their analysis and advice will be unbiased.

Whatever's the *best bag for your use* . . . we make it.

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BETTER BAGS SINCE 1858

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WE'RE proud of these companies we service, for with every packaging job Trans-Pac does for them goes their confidence and respect for our ability as creative packagers. Can't really blame us for being as proud as punch about all this, when you stop to figure that many of our clients are leaders in their fields. That they are stringent and unyielding in wanting only the best packaging for their particular products.

Soon many new and superior packaging materials will be available. Whether it's pliofilm or glassine lamination, we can plan your package needs now. In addition to our own staff, we also cooperate with the engineering and research divisions of the leading manufacturers of packaging supplies. This "plus service" is without cost to you.

Our long experience dealing with diversified products enables us to turn out the best in present-day packaging. Post-war packaging plans, however, can formulate only as soon as facilities are available. Until that time, we should be pleased to advise you on your packaging requirements.

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CARTER PRODUCTS, INC.
BREAKSTONE BROS., INC.
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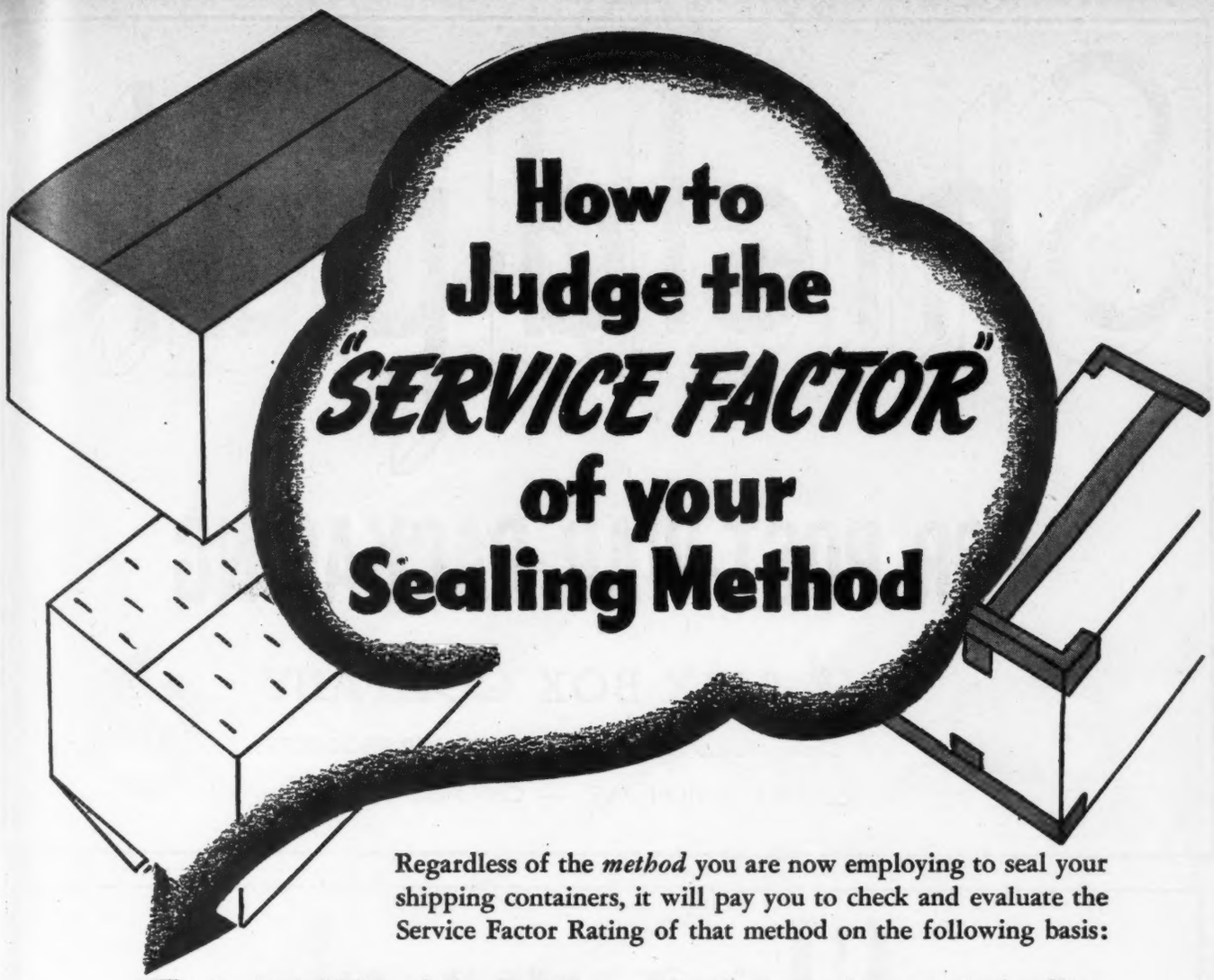

How to Judge the "SERVICE FACTOR" of your Sealing Method

Regardless of the *method* you are now employing to seal your shipping containers, it will pay you to check and evaluate the Service Factor Rating of that method on the following basis:

☐ 1 **Durability of the "seal"** . . . under the stress of "in transit" handling, re-handling, and storage. No seal is any more permanent than the flap area covered by it.

☐ 2 **Economy** . . . not only in terms of *first cost* but also in protecting the contents of the container against loss or damage.

☐ 3 **Versatility** . . . in terms of completely satisfactory application to any type of container.

☐ 4 **Safety** . . . complete freedom from destructive chemicals that are hazardous to employees and corrosive to equipment.

☐ 5 **Availability** . . . from your source of supply as well as "ready-for-use" availability in your plant.

☑ Findley's case-sealing adhesives are supplied in specialized formulations to meet all requirements, regardless of container stock or finish . . . providing a permanent, overall glue bond that actually reinforces the shipping container and adds greatly to its rigidity. Clean, safe, economical, versatile . . . and available in any desired quantities.

THE F. G. FINDLEY CO., 1230 N. 10th Street, Milwaukee 5, Wisconsin

Write for free copy of 24-page Findley Handbook on case sealing.

Findley's INDUSTRIAL ADHESIVES Exclusively

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NEW PLASTIC COATED FOILS, FABRICS AND PAPERS TO WATERPROOF AND MOISTURE-VAPOR PROOF PACKAGES. ALSO, PROTECTION AGAINST MILDEW, ACID, DAMPNESS AND RUST.

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Protects against shipping damages

. . . provides a jewel-box setting!

Plan now to make your postwar package as modern as your postwar product. And that's easy when you use KIMPAK* Creped Wadding. For KIMPAK dresses your package as it protects your product. It complements the beauty of your product—provides a jewel-box setting that increases eye-appeal and buy-appeal.

So soft, so clean, so resilient KIMPAK guards against mars or scratches—damage or breakage. Flexible and easy to use, KIMPAK saves time and work in the shipping room. Often cuts freight costs by reducing cubage.

There's a size and type of KIMPAK to protect everything from glassware to refrigerators. Learn more about this modern packaging material. Just mail coupon today for free illustrated booklet.

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As a cushioning material for interior packing, as a filter medium for liquids and air . . . for wiping and polishing . . . as a carrier for plastics . . . for general padding purposes, including furniture and automobile upholstery . . . as a filler for seaming cord and tubular gaskets.

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Creped Wadding Division, Neenah, Wis.

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Firm _____

Address _____

Our Product is _____

of the Big

"Plastics Rush"

• Today's buyers are looking for—demanding plastic products whenever possible. Countless manufacturers are in a frantic, last minute search for a reliable plastics designer and molder.

This is the time to turn to Continental Plastics Corporation and establish a permanent plastics connection.

Above the babel of plastics claims, the name Continental Plastics Corporation stands out for its record accomplishments. Here is the experience, engineering skill and facilities to insure plastics supremacy for your products.

Bring or send in your blueprints or sample products.

cpc

CONTINENTAL

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50th Anniversary

1895-1945

Two preferred war wraps now available to peace-time industry

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How INDUWRAP, because of its exclusive engineered features, won the battle against corrosion for builders of airplane engines and many highly-finished precision parts. How BROWNSKIN GRIZZLYBEAR (A-19) helped to solve the problem of delivering engines safely overseas.

These two wraps, and many others of Angier make, have proved in war their quality-right to lasting preference in peace. They come from the house that has devoted a half-century of protection to the products of our nation and its industries — in peace and war.

Overseas customers: Our export department will be glad to supply full information, samples and quotations on request.

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ON GLASS
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Liquefies at 165 deg. F. May be thinned with hot water. Can be so treated that deposits become non-remeltable.

Has inherent flexibility and complete resistance to oils, greases, alcohol, turpentine, naphtha, other organic solvents, oxygen and other gases.

Will also mix with rubber latex.

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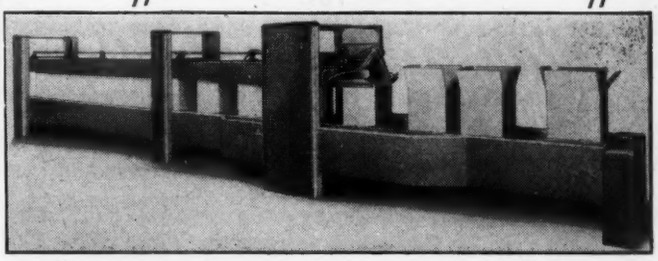
Designed for Efficient Packaging



ABC Automatic Top and Bottom CASE SEALER

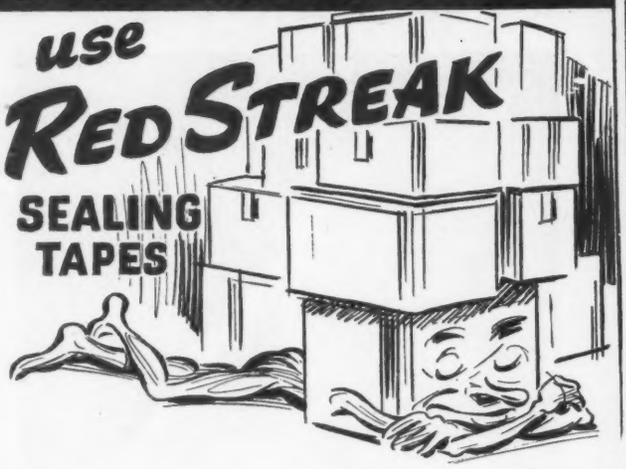
Modern, streamlined design . . . requires no operator. Seals 30 cases per minute . . . both top and bottom, top only or bottom only. Fingertip control. Extra-rigid construction. Adjustable to 6"-18" width, 8"-30" length, 3"-28" height.

Special Engineering Service
Packaging machines correctly designed and constructed to fit your own special requirements.

ABC PACKAGING MACHINE CO.
QUINCY, ILLINOIS

For Your Own SOLID COMFORT

use RED STREAK SEALING TAPES



In "Red Streak" Sealing Tapes you find a combination of good paper, good glue and plenty of it—use "Red Streak" and end your sealing problems.

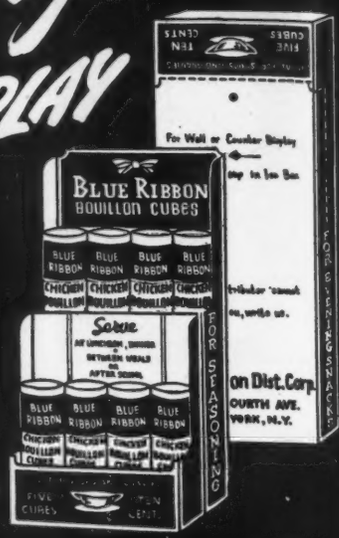
Ask your jobber for details, samples, prices.

"Red Streak" SEALING TAPES

BROWN-BRIDGE MILLS, Inc., Troy, Ohio

Designed for DISPLAY

FOLDING BOXES • ORIGINAL DISPLAY CONTAINERS



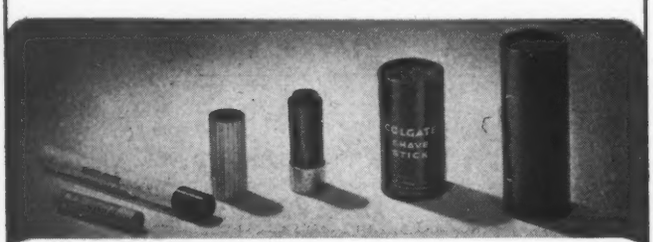
SKETCHES and SAMPLES SUBMITTED

ACME FOLDING BOX CO., INC. EST'D 1914
141 E. 25th St., New York 10, N. Y.
Telephone MUrray Hill 4-7520

MANUFACTURERS OF PAPER TUBE CONTAINERS

FUNCTIONAL PACKAGES for War and Post War

The engineering experiences of war have developed smart new packages for post-war times.



attractive • weight-saving

Our long experience in the fiber tube industry has given us the "Know-how" to interpret post-war containers. Consult us on your packaging problems.

NIEMAND BROS. Inc.

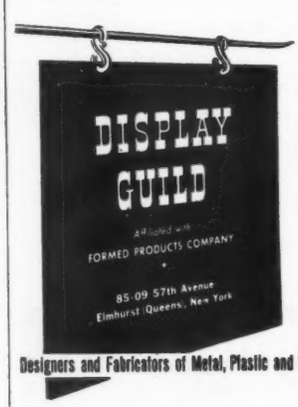
37-11 35th Avenue, Long Island City, New York
Ravenswood 8-0909 Teletype NY-4-1032

MANUFACTURERS OF PRECISION PAPER TUBE PRODUCTS

MERCHANDISING DISPLAYS with Beauty, Function, and Force

Quick Pick-Up

DISPLAY GUILD matches the personality of your product with displays that encourage quick pick-up for swift sales. Metal merchandisers, cabinets, stands and dispensers are fabricated with original and skillful technique to spur the buying action. Let us help you plan your post-war displays now.



Designers and Fabricators of Metal, Plastic and Wood Displays for Counter, Window and Floor • Business Exhibits

TUBULAR PACKAGES

for Lipsticks
Powders
Drugs

Tubular packages have found wide use under wartime shortages and peacetime necessities. They are self-labelled, attractive, sturdy, lightweight, in a wide range of colors and many possibilities of application. Let us show you. Send for samples.

Diameters: 1/16" to 3"

DIAMOND STRAW & MACHINE CO
114-116 East 16th Street
New York DIAMOND N. Y.

PAPER TOWELS

THERE will be more of them used after the war period. • We build highspeed, towel roll winders, interfolders and embossers. Printers and sheeters for your label problems. • Specifications and prices mailed you on request.

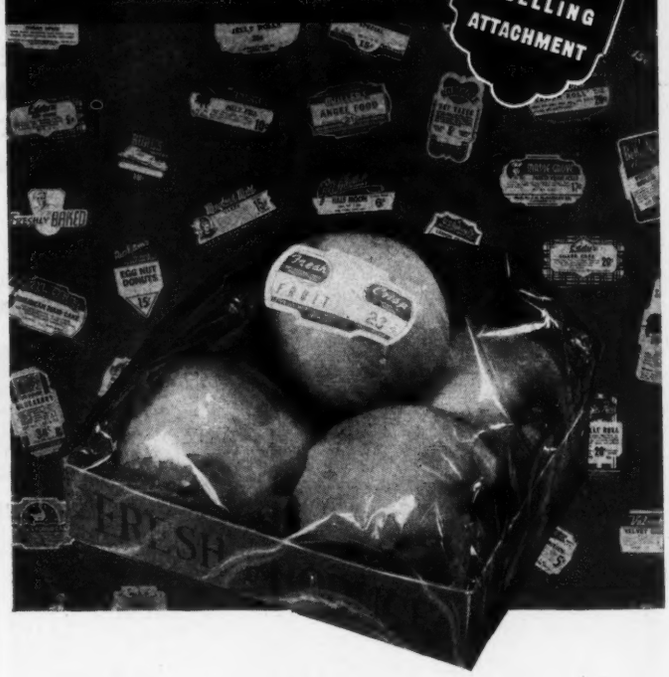
HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

"Oliver"

Roll-Type Thermoplastic

Labels

Used with the "OLIVER" LABELLING ATTACHMENT

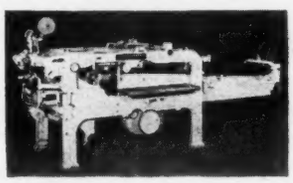


Reduce Labelling Costs . . .

Speed Production

● *Printed by "Oliver"—our modern plant is the largest of its kind producing diecut roll-type labels.*

● "Oliver" Thermoplastic Labels are a continuous strip in roll form. They are also available with perforations between the individual labels, or in loose form, for heat-sealing by hand to the wrapper or carton.



● "Oliver" Wrapping Machine automatically wraps and labels fresh produce and meats before they are placed in self-service refrigerated cases.

For labelling fresh produce and meats, wrapped for self-service, "Oliver" Roll-Type Labels are indispensable. The title, price, weight and code can be automatically imprinted on the label just before application. In other cases it may be expedient to imprint only the title and code, the retail store filling in the price and weight . . *But in all cases the "Oliver" way of labelling is the only practical way!*

"Oliver" Thermoplastic Labels are automatically heat-sealed to the wrapper. The individual labels are cut from the continuous roll just before they are applied. They are produced to synchronize perfectly with the "Oliver" Labeller to give trouble-free service.

Write for details.

OLIVER MACHINERY COMPANY
PACKAGING DIVISION • GRAND RAPIDS 2, MICHIGAN

SELECT YOUR TAPES AND SPECIALTIES FROM OUR COMPLETE LINE

SELECT YOUR TAPES AND SPECIALTIES FROM OUR COMPLETE LINE

A QUALITY PRODUCT
On-to-Sta
GUMMED TAPES
NEVER LET GO
MADE TO STAY ON
ATLANTIC GUMMED PAPER CORP.—BROOKLYN, N.Y.

GUMMED SEALING TAPE, PLAIN & PRINTED*
"CARPAC" REINFORCED SEALING TAPE
HEAVY GUMMED KRAFT
GUMMED CAMBRICS*
"INERWOV" REINFORCED CORRUGATORS TAPE
ASPHALT LAMINATED REINFORCED WATERPROOF WRAPPING PAPER
VENEER GUMMED TAPE
GUMMED HOLLANDS*
"SOLSEAL" WATERPROOF TAPE
CREASED GUMMED STAY*
COMBINING

*SAMPLE BOOKLETS UPON REQUEST

ATLANTIC GUMMED PAPER CORP.
MANUFACTURERS OF "On-to-Sta" GUMMED PAPERS
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BRANCH OFFICES: PHILADELPHIA PITTSBURGH CHICAGO BUFFALO ATLANTA LOS ANGELES HAVANA

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WAXES

For paper board impregnation

For Dip Coatings
Emulsified Waxes
Coating Waxes

(Specification AXS 1015 or 52C-31) (Int.)

Waxes for Fungus Proofing

Our laboratory will welcome your problems

ZOPHAR MILLS INC.
FOUNDED 1846
106-26th STREET • BROOKLYN 32, N.Y.

STIK-GUM

TRADE MARK

STIK-GUM eliminates curling, makes gummed tape grab faster and stick better by vitalizing the tremendous gripping power of the glue.

STIK-GUM stops time consuming, repeated rubbing, coddling, holding down here and there to make tape stick. The adhesive weld is so complete that, when gummed tape moistened with STIK-GUM is removed from a carton, it takes a strip of the carton with it—the width of the tape.

Insures delivery of carton's contents without loss. Speeds up shipments, saving valuable time on each package. Discourages pilfering.

Contents of 1 capsule mixed with 1 gal. water produces 1 gal. solution to be used instead of plain water in Gummed Tape sealing machines. Costs less than four one-thousandths of a penny per foot of gummed tape. Packed 24 capsules to the box at $5.00 per box delivered.

LIBERAL TRIAL OFFER

Order a box of STIK-GUM. Use 1 capsule to produce positive seals on over nine-tenths of a mile of gummed tape. If not completely satisfied, return balance within 30 days and we will cancel the invoice.

SERVICE INDUSTRIES
Chemical Products Division
2103-07 E. Somerset St., Philadelphia 34, Pa.

Good Package Design

IMPORTANT TO MERCHANDISING AND TURN-OVER

Attractive packaging makes merchandise desirable. . . . It is the silent salesman of your product on retailers shelves.

Recognized for their contribution to outstanding design in modern packaging, the ability and experience of the WLS staff of artisans are at your service.

Interview with Principals • No Obligation

32 Pages . . . 420 Pictures . . . an Exhibit of Performance
Write for a copy of it Today on your business letterhead

AMERICA'S LARGEST ORGANIZATION SPECIALIZING IN MERCHANDISE PRESENTATION

W. L. STENSGAARD AND ASSOCIATES, INC.

346 N. JUSTINE ST. • CHICAGO 7, ILLINOIS

EVER SINCE 1885 WE'VE MADE "STICKUM" THAT STUCK

Way back when Fanny was a girl's name, more than one luckless Lothario discovered that Tanglefoot stickum could make almost inseparable associates of Tanglefoot flypaper and a carelessly placed silk topper.

More tenacious, by far, is the stickum on the super-strong Tanglefoot Kraft Sealing Tape. It NEVER lets go! Be sure your products have the maximum shipping protection. Insist on TANGLEFOOT.

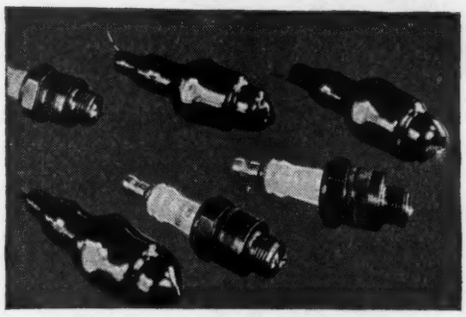
Tanglefoot GUMMED KRAFT SEALING TAPE

THE TANGLEFOOT CO., 405 Straight St., Grand Rapids 4, Mich.

NO MORE CORROSION

in Shipment and Storage

Here's why: Metal parts can be completely protected from corrosion with coatings of ethylcellulose compounds or other plastics. Applied by dipping, the plastic forms a tight-fitting coating that offers full protection even from handling damage during overseas shipment and long-time storage. When the part is to be used, the coating is easily cut and peeled off.

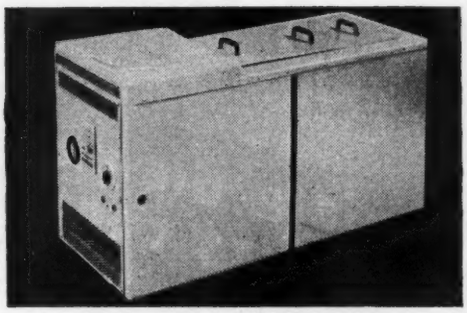


SPARK PLUGS COATED WITH PLASTIC

Here's how: For top-quality coatings, use the YM Plasticoater, a self-contained unit with these outstanding features:

- ★ **ACCURATE AUTOMATIC TEMPERATURE CONTROL** of the heating oil jacket and the plastic.
- ★ **UNIFORM TEMPERATURE DISTRIBUTION**
- ★ **CONTINUOUS PLASTIC MOVEMENT,** to remove bubbles and prevent separation of the compounds.
- ★ **CONSTANT DIPPING SURFACE LEVEL.**
- ★ **AUTOMATIC TIME CLOCK** to provide for early morning preheating of plastic—no delay at beginning of working hours.

Plasticoaters are made in a range of sizes that will meet practically any hot-dipping requirements. Write for further information today.



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THE YOUNGSTOWN MILLER COMPANY

A Subsidiary of Walter Kidde & Company, Inc.

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also HIGH PRESSURE DIE CASTING of ZINC and ALUMINUM

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CASE LINERS CARTONS
WATERPROOF PAPER WRAPPERS

forms an air tight, water tight seal — withstands temperature and humidity extremes—easily applied by brush or spray gun.

available for IMMEDIATE SHIPMENT in 1 Gal.—5 Gal.—50 Gal. containers

Meets Army Spec. 100-19 and JAN—A—101 Type A & B.

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YOUR INQUIRY WILL BRING THE ANSWER
(3 Minutes Reading Time)

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FORMERLY WATERBURY BUTTON CO., EST. 1812
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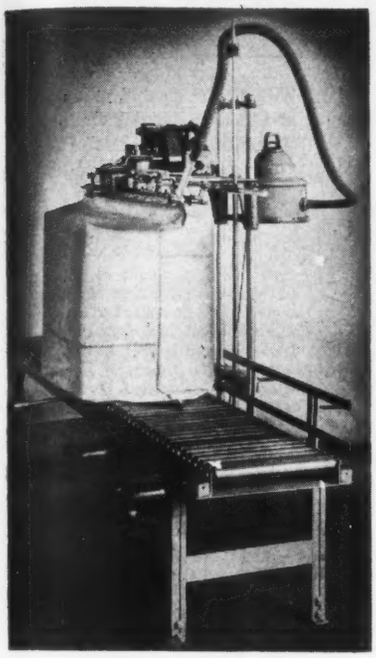
AMSCO

FOR YOUR PACKAGING MACHINERY REQUIREMENTS

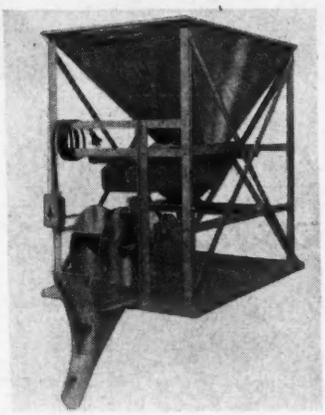


AMSCO High Speed
Bag Sealing Machine

For greater efffciency, speed and economy, AMSCO offers machinery to perform the following operations.

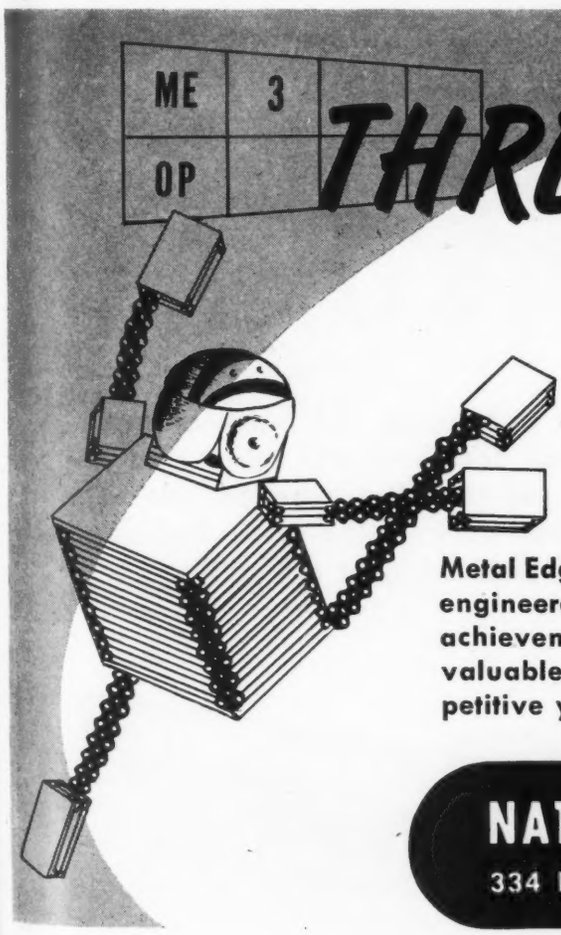
1. Wrapping
2. Sheeting and gluing
3. Bag making
4. Bag and carton weighing and filling
5. Bag sealing, large and small
6. Sandwich making and wrapping
7. Hand and foot operated sealing devices — hot plates and sealers

LITERATURE AVAILABLE



Holm Weighing &
Filling Machine

AMSCO
PACKAGING MACHINERY, INC.
31-31 48th AVENUE, LONG ISLAND CITY 1, NEW YORK
STILLWELL 4-4840



THREE BIG POINTS FOR METAL EDGE

❶ PACKAGING
❷ MATERIAL HANDLING
❸ INVENTORY CONTROL

Metal Edge—the "plus value" packaging method expertly engineered to the particular business—has scored notable achievements during these war years—might be a very valuable player to have on your side in the fiercely competitive years ahead. Inquiries invited.

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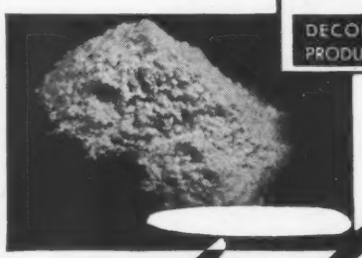
Are your designers fully acquainted with the uses of

Flock?



RAYCO *Flock*

Gives the appearance of

SUEDE • VELVET • VELOUR

to all sorts of paper and cardboard products in a VARIETY OF RICH COLORS

Make your designers aware of the opportunities to dress up packages and displays with FLOCK. LOW IN COST. Beautifully rich effects on humble bases of paper, card, cloth, etc. For over-all surface coating; will also permit designs or lettering. Learn about the many cuts, colors and possibilities of these finely cut textile fibre particles.

Request Samples and Prices

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Developers and Manufacturers of Printing and Coating Flock

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Copies up to 18" x 22"
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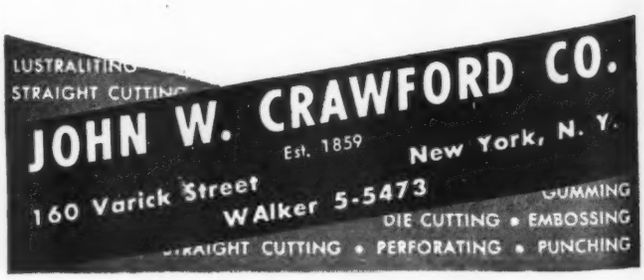
(Representatives in principal cities and Canada)

In packaging, the finish is important, too! Beautiful colors and designs need the extra sparkle of a good coating, the extra distinction of embossing or die-cutting.



THE IMPORTANCE OF LITTLE THINGS

Adhesives are usually the smallest item of expense in any package. Yet most containers stand or fall on their adhesives.

Bingham specializes in producing reliable adhesives for the most specialized packaging purposes. Many of America's leading packages are glued with BINGHAM products.

Send for samples without obligation.

BINGHAM BROTHERS COMPANY

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EVERY KIND OF ADHESIVE

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When Eye-Appeal Means Sales-Appeal

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That Add Distinction To Quality Merchandise

Your product looks better — sells better — when set off by a Lanova box or specialty paper.

- Metal Foils
- Fancy's
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- Wood
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Large varied stocks maintained for immediate delivery. Write for sample sheets and books — on your letterhead, please.

Consult without obligation our staff of packaging-design experts — at your service always!

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"PACKAGED" in a Waterproof Paper Bag for PROTECTION

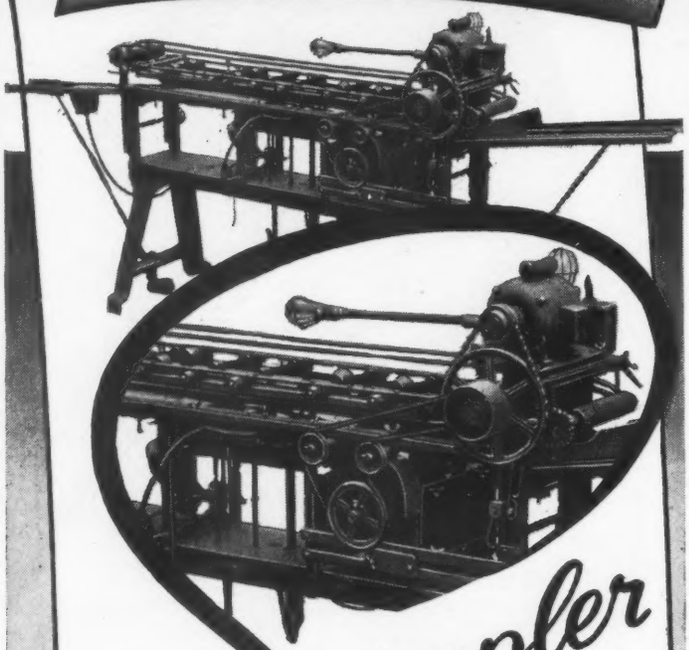
C.T.C.

WATERPROOF LINERS AND BAGS

C. T. C. INDUSTRIES, INC.

FRONT AND BECKETT STS., CAMDEN, N. J.

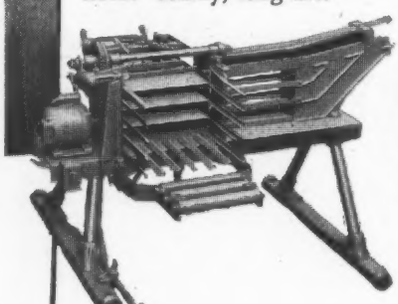
FMC — KYLER LABELERS



Simpler

The extreme simplicity of FMC-Kyler Labelers results from the absence of complicated mechanisms. This quality labeler does more and better work with about one-third fewer parts. One operator quickly and easily makes all adjustments for change in sizes of containers.

And also has these other unusual features! *Handles a wider range of work. *Lap Paste System. NO DRIP. Automatic adjustment for any width label. *Large Label Box holds two full packs of labels. *Automatic Control. If discharge chute is full, labeler stops. *Lower Operating Costs. Uses less paste and gum. *Lower Maintenance Costs. Fewer repair parts needed, and they cost less. *Speedy Size Change. No tools needed. All change points marked. *Seaming Pad easily removed, self-adjusting. *Adjustments provided for every possible need. *Sturdy, long life.



FMC — KYLER BOXER

All sizes have one-piece main frame construction, are extremely rigid, with great strength and durability. Maximum speed with minimum man power and floor space.

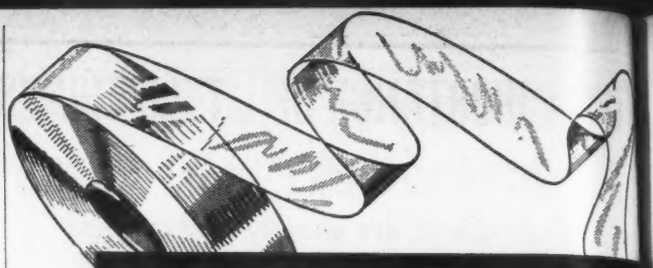
BRAND NEW FMC CATALOG *contains full details of these new additions to FMC's complete line of food processing equipment.*

K-102

Food Fights for Freedom—Food Nourishes the Nations

FOOD MACHINERY CORPORATION

Sprague-Sells Division · Hoopeston, Illinois



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A Pioneer Converter of Containers Made of

DU PONT
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COLORFUL · DURABLE · DEPENDABLE · SALE-ABLE

Fabricated **PLASTIC FILMS**
VINYL • BUTYRAL • CELLULOSE ACETATE
for
Wearing Apparel, Sporting Goods and Household Items

Laminated **PLASTICS**
OF ALL TYPES
VINYL
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Fabricated **BOXES CANNISTERS**
in all forms and shapes for packaging purposes

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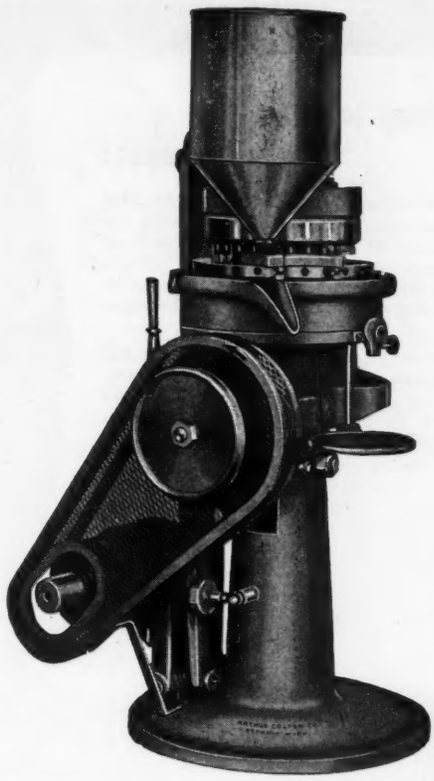
SERVING COSMETIC, DRUG TRADE and OTHER INDUSTRIES

NEW
ROTARY TABLET PRESS

New series 200–25 tablet machine embodies years of experience in building equipment, incorporates refinements giving an entirely new standard of performance.

Special features include new variable lower punch pull-down track plus micrometer cell adjustment minimizing punch and die wear and practically eliminating capping; solid steel tie bar; centrally located main drive shaft; lower center of gravity. Range of operating speeds is provided by built-in variable speed drive. Power transmitted through lever operated disk clutch. Special drive materially reduces power consumption. Standard speed motor. Capacity per minute: 300–800 tablets. Diameter of tablet 3/16″ to 5/8″, maximum depth of cell: 11/16″. Floor space: 30″ X 36″, height: 60″, net weight: 1025 lbs.



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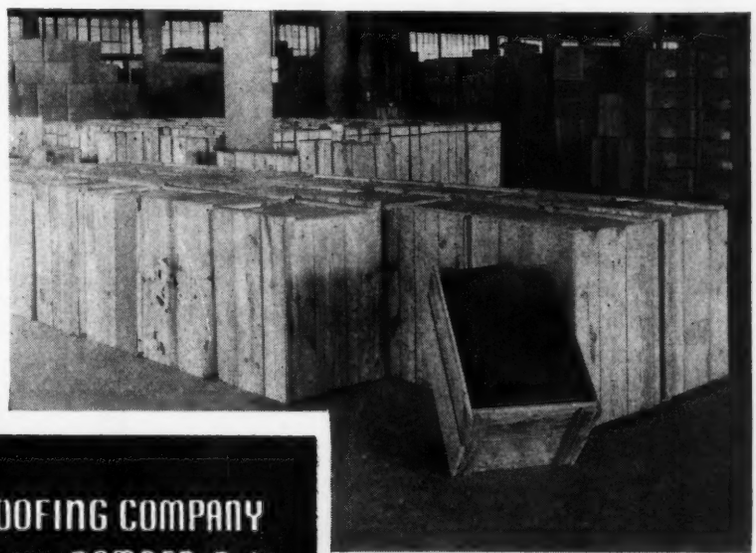
2002 E. JEFFERSON AVE., DETROIT 7, MICHIGAN

NATCO SPECIAL *Protective* PAPERS
(Government Standard)
FOR SPECIAL PURPOSES

ARMY E NAVY

#4—Box Lining—strong, flexible, water-proof papers are designed especially for maximum protection inside boxes. Such papers protect all types of merchandise from food to machinery.



Our special sheets are
Laminated Papers
Reinforced Papers
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FOR
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2. Box Lining
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National WATERPROOFING COMPANY
FRONT AND BECKETT STS. CAMDEN, N.J.
DUPLEX · SATURATED · REINFORCED · WAXED & OILED PAPERS
BUY UNITED STATES WAR BONDS & STAMPS

BE ▣ SQUARE WAX

from Soup to Nuts —in Packages!

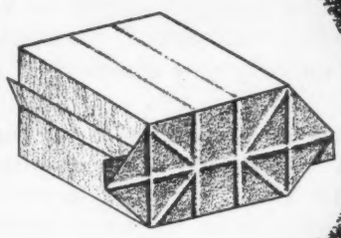
Not too many years ago such an idea would have been out of the question. But the advances of modern packaging methods have made successful packaging of dehydrated soup or shelled nuts as practical as protecting breakfast cereals by the same method.

The most important achievement is the high resistance to moisture vapor transmission—whether from within or without—for which Be Square Wax is widely and favorably known. With dehydrated soups, moisture vapor must be kept OUT of the package; while with shelled nuts the object of protection is just the opposite. The strict laboratory control which governs the quality and uniformity of Be Square Waxes assures this protection. In addition, these fine waxes are odorless, tasteless, and chemically inert. Investigate their application to YOUR products. Samples available in white, black and amber.

BARECO ▣ OIL CO.

BOX 2009 TULSA, OKLA.

Are You SHIPPING Your PRODUCT OVERSEAS?



McKay-Davis APPROVED Case Liners Now Available

● Our expanded facilities for the production of *OrdnanceApproved* water proof case liners permit our supplying L2 and M2 liners to a few additional manufacturers. The McKay-Davis designed patented tab liners are uniqueinsimplicity,tailoring and high quality. Huge production, automatic, quality controlled, assures economical price—immediate delivery. Consult our packaging engineers about your problems.

McKAY-DAVIS CO.

TOLEDO, OHIO

SEND FOR HARMONY WITH RED COLOR FACTS #18 TODAY

A series of five color schemes using red as a key color is presented in EAGLE's No. 18 Facts folder entitled "Color Harmony with Red".

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COMPANY _____

ADDRESS _____

EAGLE PRINTING INK COMPANY

DIVISION / GENERAL PRINTING INK CORPORATION

100 SIXTH AVENUE, NEW YORK 13, N. Y.

CHICAGO BOSTON JERSEY CITY TORONTO

Wartime Developed Packagings ...Available for General Use

Waterproof Kraft papers, greaseproof, non-corrosion papers, waterproof case-liners, cloth backed foil containers—safe guarded vital war material on the long journeys to Europe and the Pacific ... kept vital supplies in perfect preservation until needed.

Cloths, acetates, foils, boards, glassines, cellophanes and papers, "hot-melt" coated and/or laminated, developed for wartime uses to exacting military requirements, produced and proven under wartime conditions, will be available in increasing amounts as production for peace-time industry gets under way.

Limited quantities of laminated, coated and printed papers were supplied to essential civilian users before hostilities ceased.

We are interested in your future requirements and gladly offer our consultation . . . samples sent upon request.

The Milgate Line

PACKAGING DIVISION

E. W. Twitchell Incorporated

784 Public Ledger Bldg., Philadelphia 6, Pa.

Fresh as a Daisy!
HI-BINDER WRAPPER
LIFE SAVER IN WAR . . .
. . . PROFIT SAVER IN PEACE!
This new-type foil wrapper with a paper backing proved its merits in overseas shipments to the fighting fronts. If you pack meats, candies, drugs, tobaccos, any product whose freshness must be retained, HI-BINDER vaporproof, waterproof wrapper can help you. We can make to your specifications, or have our laboratory submit, a wide variety of plastic film laminated with paper or plastic impregnated sheet wrappers to fit any carton liner, packaging or bag-making machine.
Converted by The Floyd A. Hales Co., Bedford, Ohio for
THE CENTRAL OHIO PAPER COMPANY
226 North Fifth Street Columbus 16, Ohio
Also in Detroit, Cleveland, Pittsburgh, Dayton, Indianapolis, Toledo, Charleston

A Message from CONSOLIDATED

Priceless—our Victory and long awaited Peace—priceless too, the good will, the patience and the understanding of so many of our customers. Some have waited since 1942 for Capem, for Hoepner, Sealtite and other outstanding Consolidated machines.

We are not unmindful of our deep obligation to you and others whose confidence in this company and its products has been so evident. We are grateful, indeed, for Victory and for the privilege of again serving your accumulated needs. Humbly we pledge not only our own utmost effort, but every available facility we can practically employ to meet our important responsibilities.

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO 13, N. Y.

CAPEM • SEALTITE • HOEPNER

EYE PLUS BUY APPEAL

In these days of self-service, the shopper is influenced by the appearance of things. She likes to see what she is buying, but she also wants her food products protected against human touch and dirt. A package that meets both requirements quickly finds its way into the shopping bag. To place the transparent overwrap around the package neatly and securely, is the function of the Hayssen. For full information about this speedy, dependable and economical machine, write the factory today. It pays to wrap the Hayssen way.

Hayssen Mfg. Company, Sheboygan, Wis.

HAYSSEN ELECTRONIC CONTROLLED WRAPPING MACHINES

THIS "READY MADE" PACKAGING DEPARTMENT CAN SAVE YOU MONEY

We have { *THE ORGANIZATION*
THE EQUIPMENT
THE "KNOW-HOW"

Our custom packaging department will do your packaging for you. All set-up and running, we are ready to take on your job.

A long record of successful packaging for other companies is your best guarantee of good service. We handle all types of dry powders, chemicals, cosmetics and household products in cartons, cans, set-up boxes, round paper packages or envelopes. We do your mixing, filling, weighing, labelling, etc., on high speed automatic equipment. Call on us to handle all or part of your packaging.

Write or phone.

THE STEVENS-WILEY MFG. CO., INC.

Hancock, Palethorp & W. Berks Streets — Philadelphia 22, Pa. REGent 1616–1617

FINE WOODEN CHESTS BOXES·DISPLAY CASES

"From Standing Timber to Finished Product"

We specialize in the design and manufacture of silverware chests, jewelry and display cases, wooden boxes, packing cases and other wood containers. Your inquiry invited.

ROCK

Manufacturing Company

STOUGHTON, MASSACHUSETTS

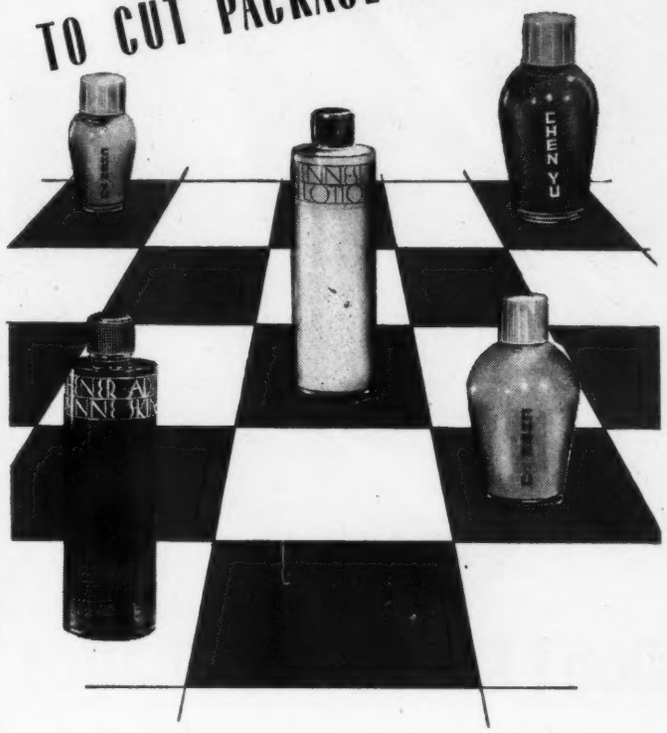
MACHINERY WANTED FOR EXPORT. NEW OR SECOND HAND IN GOOD CONDITION. METAL SCREW CAP-MAKING MACHINERY. FIBRE DRUM-MAKING MACHINERY. GEARED PRESS ABOUT 125 TONS PRESSURE.

Write Box 341D

c/o MODERN PACKAGING

122 EAST 42nd ST. NEW YORK 17, N. Y.

COSMETIC MANUFACTURERS USE ENGRADEL* DECALS TO CUT PACKAGE INVENTORY



National Drug and Associated Distributors use Engradel* transparent, alcohol-proof decal labels to keep their package inventories at the lowest point for highest efficiency. Similar containers are used to package their entire line of scents, each package being individualized with an Engradel* decal applied in their own plants. Not only are the labels beautiful and durable—they perform an important economic function by enabling these companies to keep a minimum stock of unfilled packages.

*U.S. Pat. NO. 1803836

PALM, FECHTELER & CO.

220 W. 42nd St., New York 18, N. Y.

21 E. Van Buren St., Chicago 5, Ill.

Don't Leave it to Chance

In war and peace manufacturers recognize the importance of specifications in production. They don't toss a coin to make a decision. Equally important, and often overlooked, is the necessity for adhesives to be particularly designed for a specific job.

UPACO, in addition to featuring a complete line of high quality flexible glues, stripping glues, labeling glues and pastes, and our famous GLU-WELD water-resistant adhesives, is backed by over 75 years of experience in formulating specialty adhesives for particular requirements. The UPACO laboratories are available at all times to help you solve all adhesive problems. We are anxious to work with you on possible post-war applications of industrial adhesives, and we welcome your inquiries.

GLU-WELD WATER RESISTANT ADHESIVES—TRANSPARENT FILM ADHESIVES

UNION PASTE COMPANY

Quality Adhesives Since 1866

1605 HYDE PARK AVE. UPACO HYDE PARK, MASS.

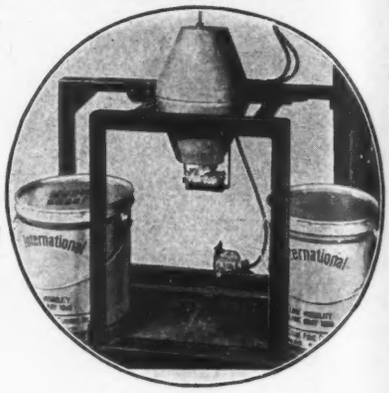
CASE, BAG AND CARTON SEALING GLUES — LABELLING ADHESIVES

GLU-WELD AND GLU-SHIELD AVAILABLE
IN THE MIDWEST FROM
THE F. G. FINDLEY CO., MILWAUKEE, WIS.

CODE DATE *ALL* TYPES OF CONTAINERS FLAT OR RECESSED THIS *NEW* MARKOMATIC WAY

Example 1 of a series

NO WORK STOPPING
EASY TO INSTALL
FULLY AUTOMATIC
SELF-SYNCHRONIZING



MARKOMATIC conveyor model at modern plant of International Paint Corp., Union, N. J., marks code date on recessed top automatically, without stopping can. Mr. A. R. Smiles, Factory Manager, says, "Most efficient—contributed to increasing production—highly recommend this equipment."

MARKOMATIC marking equipment marks all types of container surfaces automatically with permanent quick-dry ink. Heavily constructed of metal for years of use. Guaranteed for one year.

Have you a marking problem?
Write today—no obligation

MARKING EQUIPMENT

ADOLPH GOTTSCHO, INC., 183 DUANE ST., NEW YORK 13, N.Y.

You Need Look No Further ... for Your Partition Needs

IMMEDIATE ATTENTION
Given to Requests for Estimates on

TRIMMED AND PLAIN

PARTITIONS

FOR SET-UP AND FOLDING BOXES

WRITE, PHONE or WIRE for Quotations on Your Requirements

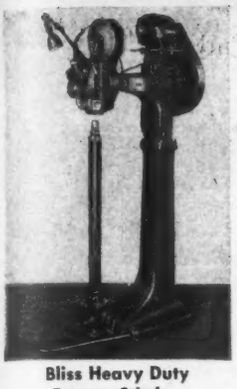
Prompt Deliveries Guaranteed

PETER

Reasonable Prices Assured

Manufacturing Co.

647-649 LEXINGTON AVE. BROOKLYN 21, N. Y.

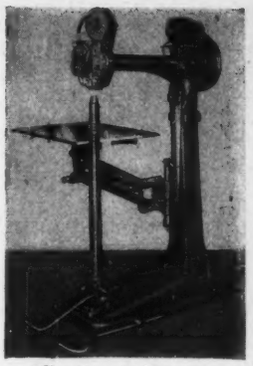


Bliss Heavy Duty Bottom Stitcher

WIRE STITCHED CONTAINERS
protect your products
WHEN OUT OF YOUR CONTROL

Corrugated or solid fibre shipping containers with wire stitched top and bottom flaps make the strongest, most rigid containers. Shippers find them the safest containers for protecting their products in transit and storage. Wire stitching utilizes the entire strength of the board and provides a closure that is uniform.

Waterproofed containers, difficult to glue, are now required for some products shipped to the armed forces. Tests conducted by the Container Testing Laboratories, New York, have revealed that no flap failures occurred after waterproofed containers with wire stitched seams, tops and bottoms were subjected to 24-hour immersion.

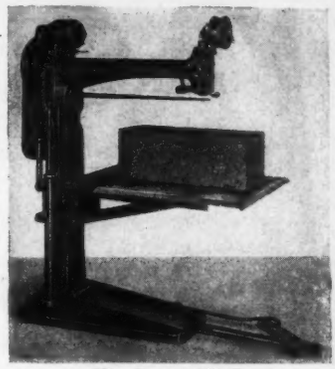


Bliss Top and Bottom Stitcher

Latham Improved Bottom Stitcher

BLISS *and* LATHAM WIRE STITCHING MACHINES

Are widely used by Packers and Shippers for assembling and sealing Bliss Boxes and Regular Slotted Containers, both corrugated and solid fibre; also for many types of set-up and telescope boxes used in packing and shipping. Be sure to investigate these high speed, convenient, long service stitchers before you buy.



Bliss Power Lift Top Stitcher

Ask for illustrated literature on your stitcher requirements

DEXTER FOLDER COMPANY, 330 West 42nd Street, New York 18, N. Y.

Chicago: 117 West Harrison Street Philadelphia: 387 Bourse Building Cincinnati: 1335 Paxton Street

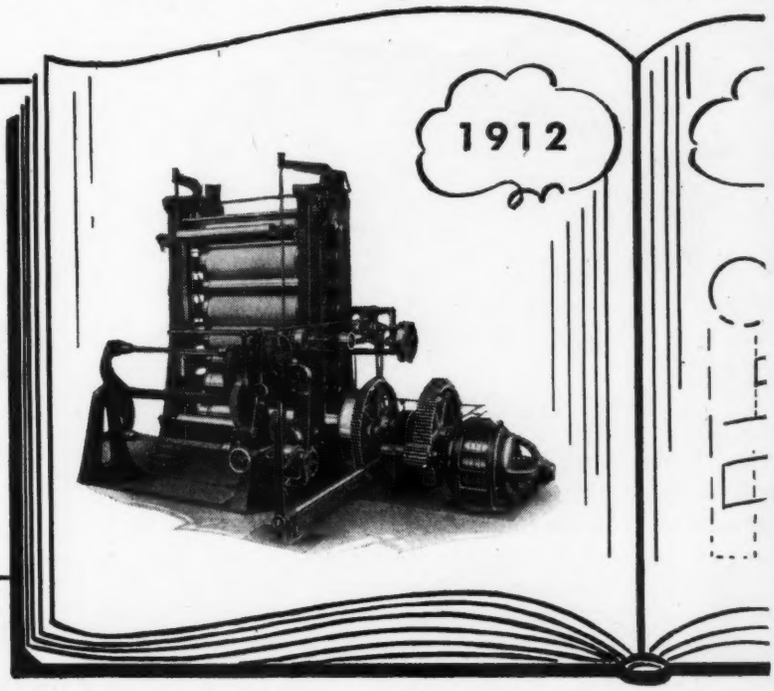
A NORWOOD FIRST *at the Turn of the Century*

Back in 1912, Norwood built the first glassine calender in the United States. It's still running every day! That's how well Norwood designs have always been planned — how dependably Norwood craftsmen have built for the future. A Norwood machine is never obsolete.

This reconversion period is the ideal opportunity to discuss modernization of your present paper finishing machinery or new equipment from Norwood's postwar line soon to be featured in this space. Check this list of Norwood products for the paper converter and packaging user. Then submit your problems to us.

Super Calenders
Friction Calenders
Embossing Machines
Rotary Coating Units
Folding Machines
Laminating Equipment
Multi-Color Rotogravure Printing Machines

C-1

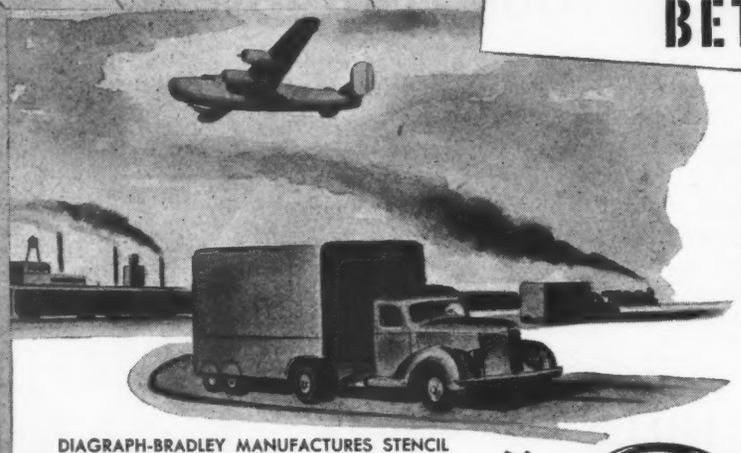


The NORWOOD ENGINEERING COMPANY

14 No. Main St. • Florence, Mass.

"If you use Paper - you can use Norwood"

BETTER INKS
BETTER DELIVERIES



STENCIL ADDRESS YOUR SHIPMENTS

CLEAR... EASILY READ... PERMANENT STENCIL ADDRESSED SHIPMENTS will help to speed and insure their delivery on time.

DIAGRAPH-BRADLEY non-settling, non-clogging Stencil and Marking inks have been developed through 50 years of research to do a better marking job. A DIAGRAPH-BRADLEY ink is manufactured for every marking need in black and colors, meeting all Government performance specifications.

DIAGRAPH-BRADLEY MANUFACTURES STENCIL CUTTING MACHINES FOR EVERY SHIPPERS NEEDS.

Letter sizes ½", ¾", ⅞", 1¼", 1½" and 1¾".

*Reg. U. S. Pat. Off.

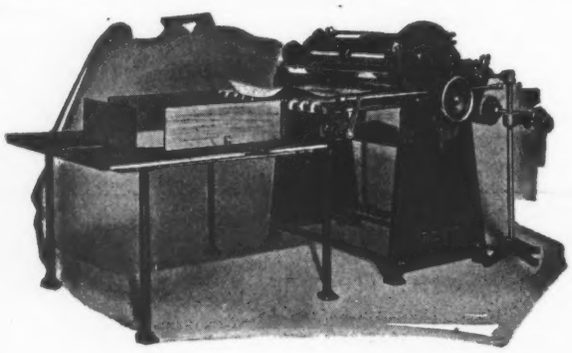
COMPLETE SHIPPING ROOM SUPPLIES

D.B. **DIAGRAPH-BRADLEY**
STENCIL MACHINES
NO. 83 DIAGRAPH-BRADLEY BUILDING
ST. LOUIS 8, MISSOURI
Distributors in Principal Cities
See Classified Section-Telephone Book • STENCIL CUTTING MACHINES

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF STENCIL CUTTING MACHINES

Many Great Nations Are Already Planning Post War Programs

as are also many business men—ARE YOU?



THE BECK SHEETER

After "Unconditional Surrender" is a fact of history, you will want the highest productive Sheeting equipment obtainable, to meet competition. Your choice may be from the hi-speed Electric Eye machines for "spot sheeting" down to the more simple standard machines for plain work.

Write us to-day for to-morrow.

CHARLES BECK MACHINE CO.

13th & Callowhill Streets Philadelphia, Pa.

Trained Thumbs

To predetermine, accurately, the ability of cartons and containers to withstand shipping stresses requires more than just mechanically precise equipment. Certain tests, such as for ply separation (shown above), call for skillfully trained hands. Our engineers helped develop specifications for the famous wartime V-boxes. To understand how container-testing can help solve your shipping problems, write for our new booklet "V-Boxes".

CONTAINER TESTING LABORATORIES, INC.
45 East 22nd Street, New York 10, N. Y.
NEW YORK • CHICAGO • SAN FRANCISCO

We cordially invite you to send us your inquiries concerning the technical uses of paper in your peacetime production and packaging.

MELROSE PACKAGING
525 UNION AVE., B'KLYN 11, N. Y.

POTDEVIN

Aniline Press For Cellophane

PMC 2977 POTDEVIN
4A 26 x 28 US & DSR

(Model 304)

4-Color Multi-length pigmented Aniline Ink Web Printing Press with Unwind, Slitters and Dual Shaft Rewind. Especially suitable for cellophane.

Note: Continuous drive for ink fountain rollers;—long, variable drying runs between first and second colors, also after last color before rewinding.

POTDEVIN MACHINE CO.
1244-38th Street Brooklyn 18, N. Y.
Established 1893 Tel. Windsor 6-1700

The Shooting has stopped!

From now on competition is going to be keener than ever and it is high time to think about your post-war selling.

Manufacturers will need the finest in lithographed advertising and display materials to attract the buyer and to keep him sold.

Window and counter displays are produced with the most modern of equipment by the skilled craftsmen of the Sale Lithograph Company. Colors are matched with spectrum analysis and precision die-cut wrappers are projector-tested to assure uniformity and trouble-free operation of your packaging machinery.

Displays, Cut-outs, Box Wrappers, Labels, Folders, Inserts, Booklets, Calendars, etc., are created and produced by the Sale Lithograph Co. for nationally known manufacturers and do an effective selling job throughout the world.

THE SALE LITHOGRAPH CO.
Color Lithographers
Since 1904 Devoted to the Production of Fine Lithography

All classified advertisements payable in advance of publication. Rates: $5.00 up to sixty words; enclosed in border, $10.00 per inch.

Classified Advertisements

Publisher reserves the right to accept, reject or censor a classified copy.

WANTED MIDWEST—Packaging Designer by large manufacturer of set up and folding cartons. Exceptional opportunity for a live wire with ability to develop and create new ideas in the folding or set up packaging field. Must have some technical experience and post war vision. Good salary and future. Give full particulars. State previous experience, education, salary, etc. Address Box 330, Modern Packaging.

PACKAGE DESIGNER wanted. Must be top-notch. Precision, speed and experience important, plus ability to meet clients and handle accounts. Excellent and permanent future, high salary. Write or visit our office nearest you. J. GORDON LIPPINCOTT AND CO., 500 Fifth Avenue, New York City—230 North Michigan Avenue, Chicago.

WANTED: INSTALLATION ENGINEERS

IF you like variety in your work:

IF you like to travel:

IF you have had experience in packaging machinery:

We have an interesting, permanent opportunity for you.

The job requires some engineering training; mechanical ability; some previous experience either in the handling of package wrapping or package sealing machines; and a reasonable amount of ingenuity in solving packaging and mechanical problems.

Good starting salary—traveling allowances—and an opportunity to share in sales—offered by an established manufacturer of packaging machinery in the Middle West.

Write giving full particulars, previous experience, availability, and present employer. All answers treated in confidence. Box 335, Modern Packaging.

LEADING BELGIAN manufacturer of folding cartons wants information on and propositions for new processes, machinery, materials, patents. Write Industrial Research Laboratory, 421 Memphis St., Philadelphia 25, Pa.

MECHANICAL

ENGINEERS

experienced in design and production of equipment to produce packaging and paper converting automatic machinery. Must have successful pre-war background. Permanent position with large, progressive organization. Box 342, Modern Packaging.

RESEARCH ENGINEER (Mechanical Graduate), mid-age, with long record in developing automatic packaging and converting machinery including tooling and shop practice desires change to responsible position with progressive organization. Personal references available. Address Box 343, Modern Packaging.

MACHINERY WANTED—NEW OR USED. Semi Automatic Package Filling for Dry Products; Carton Forming and Closing for Tuck In or Glue Flaps; Semi Automatic Spot or Full Wraparound Labeling; Simplex Cellophane Bag Making; Case Sealing. Advise size capabilities of machinery, also condition, age, make, and price. Box 344, Modern Packaging.

ESTABLISHED WHOLESALER of Packaging Material interested in making a substantial investment in a plant manufacturing or planning to manufacture such products. Box 345, Modern Packaging.

WANTED—Sales Manager experienced in flexible packaging. Excellent opportunity to develop a large national business. Box 346, Modern Packaging.

SAN FRANCISCO BAY AREA

Well established Company is interested in contracting manufacturers of corrugated containers, packaging and shipping supplies, either as buyer or representative of this zone. Reply Box 354, Modern Packaging.

WANTED—PACKAGING ENGINEER

An established manufacturer desires the services of a representative who is properly qualified to handle industrial packaging problems. He should have a general knowledge of government specifications and must have had actual experience in war-time packaging. Please reply fully, giving age, experience and salary desired. Box No. 347, Modern Packaging.

FOR SALE—Knowlton 16″ Convolute Paper Can Winder Labeling attachment—Langston Roll Paper Slitter and Rewinder, also Tube Cutters. Theo. Adams, 111 W. Washington St., Chicago 2, Illinois.

WANTED: 1 Stokes semi-automatic Jar & Can filling machine. 1 Stokes full automatic tube filling, closing and sealing machine, either 90 D or 90 H. Box 348, Modern Packaging.

MANUFACTURERS of Packaging and Plastic Products. Are you seeking aggressive representation in Metropolitan New York area? Our customers are volume buyers in cosmetics, toilet goods and allied industries. Write Box 349, Modern Packaging.

WANTED ARTIST immediately for Metal Lithography to make black and metal sketches. Pemanent job, good salary. 45 miles from Pittsburgh, Pennsylvania. Address all replies to Box 350, Modern Packaging.

COATING TECHNICIAN—Leading manufacturer of metal closures for glass containers has an opening in its Package Engineering and Research Division. The man we are looking for must know quality control procedure, be able to recommend closure coatings, and do development work on coatings for metal closures used in glass packaging of food, drugs, chemicals, spirits. Attractive salary and excellent future for the right man. Location, Ohio.

Give details, experience, age, education, salary desired, etc. Correspondence confidential. If qualifications appeal interview will be arranged at our expense.

Reply Box 351, Modern Packaging

HIGH CLASS SALES REPRESENTATIVE, New York, seeks to represent concerns for the box and packaging line. Reply Box 352, Modern Packaging.

ARTIST AND DESIGNER wanted with creative ability in lithographic plant producing box wraps, labels, folding-boxes and display containers for the textile, drug and food fields. Write for appointment for personal interview with samples of your work. David Weil's Sons Litho. Co., 315 Berry St., Brooklyn, N. Y. Phone—Evergreen 8-8900.

WANTED—ASSISTANT SUPERINTENDENT

Progressive paperboard food package manufacturer is expanding operations and requires services of a man qualified to fill position of Assistant Superintendent. Basic requirements are degree in mechanical engineering or equivalent thereof, working knowledge of modern wage incentive plans and production cost control methods, and record of top rate of product output from high speed semiautomatic paper converting, packaging, or printing machines.

This is a splendid opportunity.

Please give full details in first letter. All replies will be held in strict confidence. Our staff has been advised of this ad. Address Box 353, Modern Packaging.

As its contribution to orderly re-employment MODERN PACKAGING will print free of charge in its "Position Wanted" classification, one ad, not to exceed 20 words, for each honorably discharged veteran of the armed forces of the United Nations who has had previous packaging experience.

CUSTOM-BUILT for* S.A.

For downright *Sales Appeal . . . for class appeal to any market there is nothing better than a custom-built set-up paper box. Its product identification backs up your advertising . . . its basic style enhances your product . . . its color stands out on the dealer's shelf . . . its sturdy strength protects your product . . . its display convenience delights the dealer — all that . . . and customer acceptance leans heavily toward the custom-built set-up paper box.

A packaging expert is as near as your phone . . . call your nearest set-up paper box manufacturer. His box designer will give your product greater Sales Appeal.

NATIONAL PAPER BOX MANUFACTURERS
Association
AND COOPERATING SUPPLIERS

FOR INFORMATION OR SERVICE • CONSULT THE NEAREST SET-UP BOX MANUFACTURER

Streamlined
AS RADIO CITY MUSIC HALL'S ROCKETTES

RUGGED
AS A SHARK!

● RUGGEDNESS . . OUTSTANDING APPEARANCE . . are two important characteristics you must have in the collapsible tubes you specify. *SHEFFALLOY "Sheffield Process"* have long been known as the tubes that can "take it". Our exclusive processes of melting, mixing and tempering the metals make their toughness *bred in*—an integral, always-there, guarantee of pliable strength. You can depend upon us, too, for an outstanding job of tube decoration, even to the important small finishing touches such as the attractive beveled shoulder and matching cap on the tubes illustrated. No wonder the leaders in the drug, cosmetic and allied fields look to us for their collapsible metal tubes. For post-war competition, for vital packaging problems now, when *you* need tubes specify *SHEFFALLOY "Sheffield Process" Tubes.* A phone call or letter to our nearest office will bring full details.

Sheffalloy
TRADE MARK REGISTERED
SHEFFIELD PROCESS
TUBES

NEW ENGLAND COLLAPSIBLE TUBE CO.

3132 S. CANAL STREET, CHICAGO 16 • NEW LONDON, CONN. • W. K. SHEFFIELD, V. P., 500 FIFTH AVENUE, NEW YORK 18
THE WILCO COMPANY, 6800 McKINLEY AVE., LOS ANGELES 1

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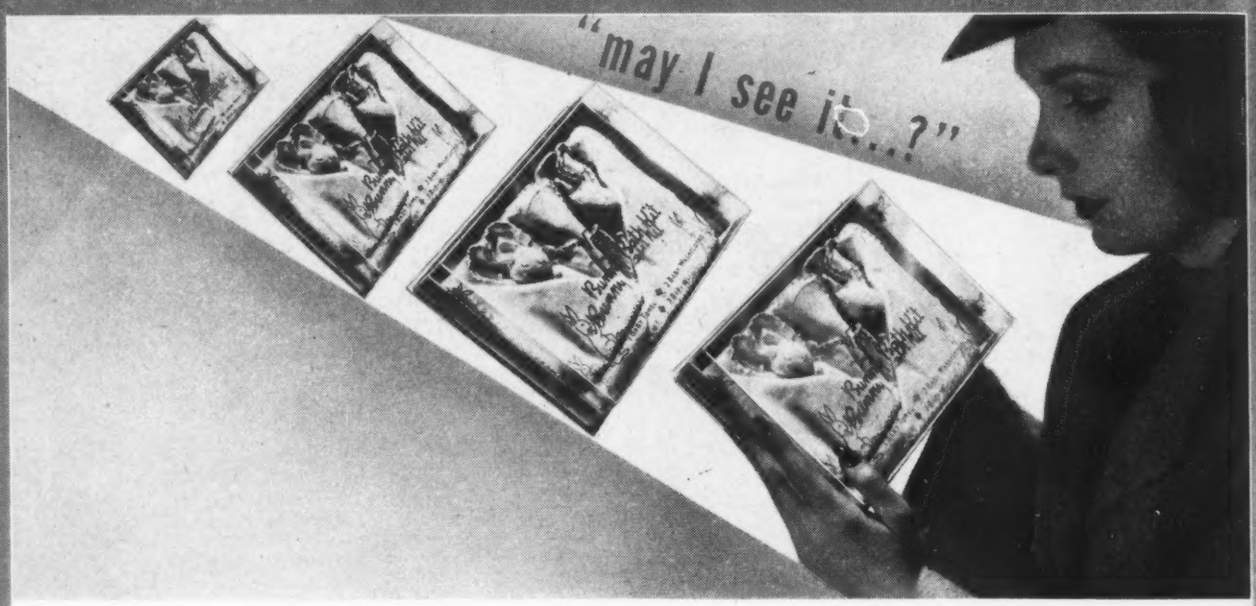

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